

INNOVATION via IMAGINEERING

Course: APS1033 Fall 2016

Instructor: Professor Joseph C. Paradi

Available any time when he is in his office: WB257, or by appointment via telephone at 416-978-6924 Ext 1 or e-mail paradi@mie.utoronto.ca.
See his Bio at the end of this document.

COURSE DESCRIPTION

Objectives

- To guide the student on how s/he would develop a view about what the future holds for society in some specific area of concern to the world of technology and life in general.
- To select a topic from a list provided and look at it from an opportunity for business from the point of view based on the predictions of 2026 reality. The student can also bring their own topic and work on it, if approved by the instructor.
- Learn how to formulate and execute the definition of a business opportunity from the projected state of affairs in the chosen area.
- Create a Future Plan for the future enterprise as appropriate.
- Non-profit, Government and institutional projects are also possible

In today's economy the most successful people are those who have business skills. In fact, today's organizations actively search for *intrapreneurs* (an entrepreneurial individual who prefers to work within a larger firm rather than start their own business). The approach to teaching this course is based on real-life business experiences and years of successful practice. The course contains very little theoretical work or academic approaches. It is designed to familiarize the student with the kinds of opportunities (problems) likely to be encountered in a business career. ***Your future job and quality of life will largely depend on how well you adapt to this new world!!***

Taking Notes:

The entire lecture notes used in the classroom is available to you on your BlackBoard Class website. All you have to do is print them or download them for use in class.

The Text:

There is no text for this course as the material is all new and no books exist as yet. However, there will be plenty of reading assignments, articles mentioned and guests who will be talking about this topic

Lecture Hours:

Tuesday: 6:00 – 9:00 pm in GB248 and the Hatchery speaker series also on Tuesday: 12:00 – 2:00 pm in GB248. It actually takes the form of a talk given by a successful entrepreneur. See “*Assignments*” below for complete description.

Time Demands

This course will be somewhat more demanding on your time and will require more work than the average graduate course you will have taken in this Faculty. Do not let the 3 hours per week, plus the 2 hour

Hatchery Speaker Series fool you into thinking that this is an easy course. If you are looking for a “bird” course, this is not it!

Details

The course is on BlackBoard, so you should sign in as soon as possible and read the handouts. We suggest that you print or copy the notes to your e-device before the lecture, read it and bring it with you to work on during the lecture. We will post on BlackBoard all handouts as the course unfolds on the dates shown in this document – so visit often.

All materials (except the final Future Plan) will be submitted via e-mail with the Subject line starting with APS1033 (so I can pick it out of the 80 or so e-mails I get daily) and showing your name and student number and the title of the document. The documents can be attachments as long as they are in MSWord.

Always remember that you are working in 2026, not 2016!!

WHAT BENEFITS YOU WILL GET

1. A lot of real life learning that will serve you well in your current career plans
2. Learn how to approach the future and what to do to prepare you for it
3. Whether you were born in Canada or not the course will open your eyes to how business is done in Canada specifically and North America in general.
4. How to prepare the **Silicon Valley Future Plan** which different than a typical Business Plan; you will need to work on this as you go.
5. Useful information on how Human Resources will evolve and this will allow you to be ahead of the curve when starting a business or just looking for a job.
6. Understand the Entrepreneur's mindset and how s/he operates. This will help you if you will become and entrepreneur yourself, but also if you should work for one.
7. Learn about the new Business Canvas process.
8. How to sell your ideas to others.
9. And many other useful and real skills.

WHY TAKE THIS COURSE

The only constant is change now

Everything changes rapidly in today's society whether we examine the legal, technological, international, financial or Canadian business environments. Clearly, the end of the 20th Century went down in history as the decade of the "Great Restructuring" of the modern World's trade and business environments; the maturing of the Internet and e-Commerce and the pervasive presence of Social Media and many other events. Canadians are not immune to these changes and must adapt in order to prosper. So looking into the future is very important and exciting.

To keep in the spirit of the “Imagineering” aspect of this course, we ask students to imagine what the world (as represented by the GTA) would look like in 2026. The student will define the specific state of an industry or technology area listed below as you imagine it to be in 2026 and then define an opportunity for a business that you could start or join in time to fit into the 2026 picture you had defined. Engineers are key players to a successful resolution to many of society's needs, so our students will focus on how to do this.

This course is for people who want to be ahead of the curve in their professional or business lives. It should be clear that the pace of change in our society and, in fact, the World, is unprecedented and the

rate is increasing exponentially. Old business models are broken on a daily basis – just observe the impact of **Airbnb** on the hotel industry, **Uber** on the transportation industry, **Rover** on the parking industry just in the past couple of years, and observed right here in Toronto!!

Some of these ideas led us to employ dramatically different approaches to old, routine problems. Technology changed the world for ever and there is no return! Observe that some of these technologies and their pioneers have even entered our dictionary, such as Google is now a verb; **Ubered** refers to a firm that has not significantly changed their business model to keep up, so it gets clobbered - BlackBerry. For example the Huffington Post has 110 million readers (and for the most part they don't even pay their writers) has elbowed aside the paper media. Others are displacing the radio, the music world, movies, etc.

ASSIGNMENTS, PROJECTS AND EXAM

The Hatchery

The University of Toronto is dedicated to supporting entrepreneurship. Besides this course one of the ways it is supported in the Faculty of Engineering is through The Hatchery. If you have the entrepreneurial spirit or an entrepreneurial idea, The Hatchery will provide you with the tools and resources to take you to the next level. This course is the perfect place for you to start. Visit: <http://hatchery.engineering.utoronto.ca/>

Hatchery Speaker Series / Guest Speaker Report

We invite practicing entrepreneurs from the business community (even past students who started successful businesses) to speak for 45-50 minutes about their business, life, experiences, successes and failures. Because this course deals with practical concepts and real events these guests are invaluable in adding a real-life dimension to the course as they have, “been there and done it all.” So, what you hear is the real stuff.

The guest speaker’s talk is followed by Q and A’s and an opportunity to network, which you should take advantage of.

You *must* submit an up to one page *Guest Speaker Report* on at least 6 speakers. The document should give an overview of the key things said by the guest speaker. It should include your thoughts and opinions and be an evaluation of what they said in the context of how it can help you to imagine the future – and inspire you to be an entrepreneur. It is not a synopsis of what s/he said – your opinions are required.

The Guest Speaker Report will automatically show up on Blackboard under “*Assignments/Guest Lectures*” at 12:00am on the day of the presentation and will be available until 12:00am of the following Saturday. You have unlimited submission attempts.

Example: The first Guest Speaker Report on BlackBoard will become available as stated below.

Hatchery Speaker Series guest lecture conflicts: You will find alternatives to the guest lectures at the Hatchery website <http://hatchery.engineering.utoronto.ca/calendar/>. There is also a set of password protected alternate guest lecture assignments in “*Assignments/Guest Lectures*”. We will give you a password to one of these assignments once you have attended the previously approved guest lecture. You will **NOT** be given a password if we did not pre-approve the alternate entrepreneurship related lecture.

Part-time students (may be working at a job full time) may choose to substitute the Hatchery Speaker Series attendance with an assignment which is to Interview a Successful Entrepreneur and write an 8-10 page biography document on what you learned about the entrepreneur and what they believe made them

successful – also what they think about the future. Instructions for this assignment are available on Blackboard but you will need to choose this option by week 2 of the course.

HOW WILL THIS WORK

There will be 3 Parts in the course, each 4 weeks long:

Part 1, the first 4 weeks, you will define the state of the "world" in your chosen business area (see the partial list below). The choice here must be made during the first week of the course, or even before. You may choose any other activity but that must be approved by the instructor.

Personal transportation in Toronto	Public transportation
Shipping (truck, rail, air, etc.)	Food distribution
Driverless vehicles	Drug manufacturing & distribution
Personal care and lifestyle	Health care and well-being
Housing (owner owned, public, shared, condos)	Energy generation and distribution
Water, sewage, garbage and recycling	Manufacturing
Telecommunications	Books, e-readers, reading
Advertising	Restaurants/bars
Live theatre - concerts	UAVs (Unmanned Aerial Vehicles)
Public schools (primary & secondary)	Post-secondary (Universities Comm Colleges)
Fashion	Nature and our effects on it (GHG, garbage...)
Architecture - what will cities' architecture be?	Broadcasts (sport) holograms?
Financial services – banking, insurance, investments, crypto currency, crowdfunding	Consumers – retail (staples and discretionary)
Internet impact related businesses	Millennials' business views and buying habits
Privacy protection	Wearable computers
Ageing and Elder care	Cloud computing, Big Data
Batteries and electricity storage	Green anything

You will have to decide on what future business in your area of interest would attract your attention as a worth-while opportunity by the end of **Part 1**. *However, no apps, software packages or leading edge computer technologies* are permitted. These fields change in months or even days, not years, so trying to predict what they will look like in 10 years is impossible.

Part 2, the middle 4 weeks will be spent in preparing a full Business Canvas – an emerging method to improve the business definition and ultimately a Future Plan that you will prepare. This is a methodology that exists today and will be very helpful in defining your Future Plan.

Part 3, the last part is when you will gather specific information and data to formulate a Future Plan for your chosen business interest.

THE DETAILS

What is your interest/idea? How do you come up with it?

New ideas tend to be the result of the recognition of an opportunity for business, but there are many ways to come up with a winning idea – and this course is quite different as you have to see 10 years in the future and decide what business you will want to be in. The best place to start is to share ideas with family and friends. Listen to people who are in business now (particularly their customers), advertising people, creative people of all types, look at advanced research from universities and scan the papers, articles,

books that deal with this topic. Search out information from people who work on planning for the future in Government, institutions, consultants and businesses. But as the course title says "Imagineering" is the basis of innovation, you will use your engineering training, your imagination, combined with the World as it will be in the future (2026) to come up with this idea. Sharing ideas and observations will lead you into hypotheses of what the value proposition of your start up should be.

Business Canvas/Future Plan Proposal

Once you have come up with an idea for your Future Plan, you must submit it to your instructor for approval. While this is not a "marked" assignment, you cannot proceed with your Business Canvas/Plan until you get an approval to do so. This will flow out of your "Imagineering" but it is in your best interest to come up with it as soon as possible. Select what you are passionate about.

Milestones in the Business Canvas Progress Report

In **Part 2**, the business canvas is a tool that will help you define your idea and its business model. We want to define a business model and how your business creates value for itself (generates profit) while delivering products or services for its customers. During this course you will have the unique opportunity to develop the different sections of the canvas and use them as the building blocks to create your final Future Plan. This is intended to give you "hands on" experience in developing a document that is *absolutely essential* if you ever get into business for yourself.

Because preparing a Future Plan is not a simple exercise and is quite time consuming, we start with the Business Canvas – See the document on BlackBoard that describes this process in detail. This Progress Report is on how far you are and what you are planning in your Future Plan to which the Canvas will lead. This is to ensure that you get started early and have at least part of your final Future Plan started. The canvas reports are to be e-mailed to the professor.

Milestone #1 will be reached by the 6th lecture of the course. We expect you to have fully developed your view of the world in 2026. Whatever you come up with, you will have to defend it! This document is marked and it will be essential for your Future Plan's success.

Milestone #2 will be due before lecture 7 with Canvas sections 5-8. Marks will be assessed.

Milestone #3 will be due before lecture 9 with Canvas sections 9-12. Marks will be assessed.

Section #13 will have a different date – done orally. This will also be marked.

By the 9th lecture you are expected to have made solid progress, indeed, complete by "painting" a picture of all of the sections required in the final Future Plan with the exception of the Financials, and the Executive Summary. Even though this is not a "finished" product, it should be done with care in a professional style and be a good representation of what your final Future Plan will look like. This must then be rapidly expanded into the written document; the Future Plan is due on the last lecture date.

Our comments will challenge you in the definition of your value proposition and market fit of your solution. We shall work with you but not for you in this process, is up to you to validate your hypothesis and develop the canvas.

Final Future Plan

The final term project involves the preparation of a *full and complete Future Plan* for a company you selected as "Your Business" and of course this will be on the idea that you worked on in the canvas and the materials you developed there. The Future Plan will consist of 4-5 pages, 1 inch margins, 12 point font and single spaced; Times Roman font. Some appropriate material may be attached. For details, see the handout on BlackBoard.

We understand that the preparation of a Future Plan is a lot of work. The creation of your Future Plan will be an organic process once you have completed all the elements of your business canvas. The comments you receive on your Progress Reports (see the due dates table below) will guide you to validate your hypothesis and value proposition. There is also a lot of help available on the Internet, so please feel free to use any/all such assistance – but make sure you give credit by citing your sources.

Keep in mind that this is a business document – not a novel and you have only a limited number of pages. Good communication is essential, so keep your language business-like, short and to the point. Always proof read to ensure accuracy of facts and language – *do not just rely on spell check!*

Elevator Pitch

Each student will have the opportunity to present their Future Plan idea to a hypothetical Venture Capitalist (the Instructor and the class). You will have to make a verbal presentation, no longer than 90 seconds, to the class (representing the potential VC/financier). Your aim is to describe your idea and the business opportunity to the VC in as compact and meaningful way as you can in order to convince them to take the next steps – that is, invite you to their office for a chat. See the Assignment for details.

Depending on class size, 1/3 rd of the class will present during lectures 9, 10 and 11, the order will be randomly chosen. There is a section in the “handouts” on BlackBoard with some Elevator Pitch articles – we highly recommend that you read them.

The Final Examination

The final examination will be open book and will draw upon material presented in the course, including class discussions, and it will be based on a case study handed out ahead of the exam. Complete lecture notes should be printed because laptops, tablets or cell phones are not allowed in the exam room.

ASSIGNMENT DUE DATES

Item	Report or Assignment	Due Date
1.	Business Area Choice	September 20
2.	Subject Matter Expert Assignment	November 22
3.	Canvas Milestone # 1	October 18
4.	Canvas Milestone # 2	October 29
5.	Canvas Milestone # 3	November 8
4.	The Future Plan – due <i>no later than 6:10 p.m., at the start of the lecture.</i>	December 8

Please respect the fact that we will enforce these dates. *Do not make any excuses because we will not be sympathetic!* If you encounter any problems we will always try to help you just set up an appointment and we will make time for you.

While we will not reject a late submission, there will be a 40% discount on the marks achieved. So, do not be late! If you do not hand in the item by the time we return the marked document to the others, we will not accept it at all! You should put these due dates into your timetable right now.

MARKING SCHEME

Hatchery Guest Speaker Reports	12%
Elevator Pitch	5%
Assignment (Subject Matter Expert)	12%
Canvas Milestone #1	7%
Canvas Milestone #2	7%
Canvas Milestone#3	7%
Final Future Plan	30%
Examination	20%

HELPFUL HINTS

Your term project is the preparation of a **Future Plan** for a company you select as “Your Business.” This requires a great deal of work. Nevertheless, here are a few comments about the term project:

1. **Do not put it off or delay starting it** as you will run out of time, for sure!
2. Plan what you have to do, put some deadlines on the action items, and get on with it.
3. Consider what the subject business will be and get started before the first class by having it ready.
4. Don't forget to include an Executive Summary (this is necessary, but, it should be no longer than ½ to one page) for the project and is done as the very last thing, this is a key component!
5. Conclusions and Recommendations are important sections, yet many neglect to do them – and suffer.
6. **Financial** section is often a problem. We offer extra help in the form of a tutorial.
7. A letter of Transmittal (this means a cover letter) is also a requirement.

A word about course management

In the business world, deadlines are very important and missing them usually costs the firm dearly. For example, if you are bidding on a contract or tender, missing the deadline by even one minute will result in your bid not being considered at all. Similarly, in this course, missing deadlines will cost you.

In Closing:

We consider it a privilege to have the opportunity to teach you.

We really enjoy the enthusiasm, intelligence, drive and vitality you display. We hope that you will be successful in anything you attempt to do in life. Good luck!

2016 LECTURES SCHEDULE APS1033

<u>Week</u>	<u>Date</u>	<u>Topics</u>	<u>Assignments & Project Milestones</u>
<u>Part 1</u> – What will 2026 look like?			
1	Sept 13	The Future - 2026 - Organizational meeting - What approach you need to imagine the future - The entrepreneur and how they see the future	
	Sept 13	<i>No guest</i>	
2	Sept 20	How to look at what is now (2016) and then (2026) - What is Imagineering? - Various approaches to projections	<i>Business Area Choice Due</i>
	Sept 20	<i>Guest: TBA</i>	
3	Sept 27	Projections to 2026 markets - What is the picture in 2016 - Examine transportation in 2026	
	Sept 27	<i>Guest: TBA</i>	
4	Oct 4	Managing in 2026 - New concepts in Management - Human resources management in 2026 - Project management, education, Supply chain management.	
	Oct 4	<i>Guest: TBA</i>	
<u>Part 2</u> – the Business Canvas			
5	Oct 11	The Business Canvas - What is it? - Section #1 – The Problem Statement - Section #2 – Customer Segment - Section #3 – Value Proposition - Section #4 – The Team & Talent	
	Oct 11	<i>Guest: TBA</i>	
6	Oct 18	Channels and Relationships and making money - Segment #5 – Business Model & the Revenue stream - Segment #6 – Barriers to Entry, Differentiation - Segment #7 – Channels - Segment #8 – Customer relationships	<i>Canvas Milestone #1 due today</i>
	Oct 18	<i>Guest: TBA</i>	
7	Oct 25	Revenues and Relationships with Partners and Resources - Segment #10 – Key Partners - Segment #11 – Key Resources - Segment #12 – Key Activities & Time Line	<i>Canvas Milestone #2 due today</i>
	Oct 25	<i>Guest: TBA</i>	
8	Nov 1	What to do about money - Segment #9 – Cost structure; revenues; Financing and the Cash flow statement - Financial reporting in the Plan	
	Nov 1	<i>Guest: TBA</i>	
<u>Week</u>	<u>Date</u>	<u>Topics</u>	<u>Assignments & Project Milestones</u>

Part 3 – Build the Future Plan

- 9 Nov 8 **Structuring your Future Plan**
- Definition and writing of the Future Plan
- Legal forms of organization
- Taxation and other matters
- Intellectual Property protection *Canvas Milestone #3 due today*
Nov 8 *Guest: TBA*
- Nov 15** *Professor Paradi is at a conference – no lecture*
- 10 Nov 22 **How to sell the idea and yourself**
- Establish **trust** between you and everyone you deal with
- Behavioural Economics *Subject Matter Expert Ass Due*
Nov 22 *Elevator Pitches and help with the FP.*
- 11 Nov 29 **Staffing, Employment Law, Communication with People**
- Your most important assets in success are your people.
- Human rights and Human Resources
- Emotional Intelligence
Nov 29 *Elevator pitches*
- 12 Dec 8 **Wise advice on the many things you need to know**
- Ethics
- Taxes
- Professionals (legal, accounting, banking & finance, etc.)
- Risk management
- Paradi's 10 Commandments
Future Plan due 6:15 pm - (No Extensions)

Thanks for the Opportunity to teach you!
Good Luck in the Exams
Have a safe and enjoyable Christmas Vacation!

Resumé
Joseph C. Paradi, Ph.D., P.Eng., FCAE

August 2016

Since his childhood in Budapest, Hungary, and immigrating to Canada as a youngster, Dr. Paradi has spent the past almost 5 decades always "building" something - first, an education. He completed high school in Toronto, then attended the University of Toronto where he obtained a degree in Chemical Engineering, followed by M.A.Sc., and Ph.D. degrees. He is a member of the Professional Engineers of Ontario and a Fellow of the Canadian Academy of Engineers.

Even before completing his final degree, he started his second "building" project, Dataline Inc. Dr. Paradi was the founder of the firm in 1968. The company was financed with a \$2.7 million dollar public underwriting of shares (March 1969 ~ 17.5 Million today). The Company grew to a 25 million dollar, large Canadian computer services company. Over 180 professionals distributed Dataline's service offerings across Canada and in most other major financial centres around the globe. The international network supported over 5,500 real time terminals using virtually all types of communication services including leased lines, Satellite and dial-up services. The system and network delivered sub-second response to stock traders, bankers, investment managers and others who needed instant information. Dr. Paradi sold the company to a U.S. firm in late 1987 and left in January 1989 after 20 years at the helm.

While still very much involved in Dataline, Dr. Paradi started his third "building" project at the University of Toronto in the Faculty of Applied Science and Engineering. This project started during the early 1980's when the first lectures in "Innovation and Entrepreneurship" were delivered. Today, he is the Executive Director of the Centre for Management of Technology and Entrepreneurship, and a Professor Emeritus in Chemical Engineering and Applied Chemistry. He teaches graduate level Business Creation and Management courses as well as undergraduate courses in Entrepreneurship and Business, Engineering Economics and Small Business management. Part of his research activities include the supervision of a group of 5 - 10 graduate students working on their Masters and Doctorates in Engineering. There is a long list of academic accomplishments also, including well over 60 graduates in Masters and Ph.D. programs, papers published and presented and conference contributions. More information is on the Web: www.cmte.utoronto.ca. He is the past Speaker of the Faculty Council and the Chair holder in Information Engineering.

The fourth "building" project was Parcorp Ltd., a company started for the purpose of investing in, nurturing and facilitating the growth of small Canadian high tech companies. He has also started several other companies: a specialised technology consulting firm (ProdActivity Associates Inc.); two firms based on intellectual properties developed at the University of Toronto (DesignCo Inc. and Translucent Technologies Inc.); and a joint venture in Hungary. He is the director and part owner of other high tech firms as well.

Dr. Paradi has always been very active in industry affairs and in the community. He was a member of the Board of Directors of CADAPSO (the Canadian Association of Data Processing Organisations) for 15 years, its President/Chairman twice (three years in total) and Chairman of most of its subcommittees at one time or another. He was active in the Information Industry Association of the U.S. He is also member of IIE, INFORMS and IEEE. Community activities have included coaching Minor Hockey for 15 years; he was a senior instructor in the National Coaching Certification Program for over 10 years. He coached Lacrosse and organized golf for kids. He participated in a number of community fundraisers as well. Dr. Paradi is a member of the Mississauga Golf and Country Club, The National Club and The Metropolitan Toronto Board of Trade.