

## **ENTREPRENEURSHIP AND BUSINESS FOR ENGINEERS**

### **Course: APS1088F Fall 2014**

**Main-Instructor:** Professor Steven Treiber meetings by appointment only in WB257, tel: 416-725-1774 or by e-mail: "*Steve Treiber*" <steve.treiber@utoronto.ca>. See his Bio at the end of this document. TA is Mehdi Nouraei, mehdi.nouraei@utoronto.ca.

**Course Coordinator:** Professor Joseph C. Paradi - telephone: 416-978-6924 ext. 1, or e-mail *paradi@mie.utoronto.ca*. See his Bio at the end of this document.

**Notes:** This course is very different from any others offered in Engineering, or for that matter, anywhere else in the University. There are 5 such courses given each year at the undergraduate level, one each in CHE, CIV, ECE, MIE and MSE. The Graduate version, this course, shares much with the undergrads courses and yet is substantially different too – as will be evident later. However, if you had taken any of the above courses, or either or both of the APS234 or APS432 courses then taking this one is not appropriate. We provide the entire lecture series' notes and handouts used in the classroom so that you will not have to take detailed notes, save on texts and get the most up-to-date material. You should print out these notes and bring them to the classes and add whatever new information is given during the lectures.

**Text:** Longenecker, Donlevy, Calvert, Moore and Petty, "**Small Business Management – an Entrepreneurial Emphasis**" Thomson Nelson publishers, ISBN 0-17-616847-8

**Lecture Hours:** Mondays from 6:00 – 9:00 pm in WB342 and the Hatchery Speaker Series (marked as a Tutorial in the Calendar) is Tuesdays from 12:00 noon – 2:00 pm in BA1130.

### **COURSE DESCRIPTION**

#### **Rationale**

Everyone from the media to government is talking about entrepreneurial activities as the engine of the Canadian economy. Strategic uses of innovation in almost all businesses spell the difference between success and failure. Multinational competition in all manner of businesses from manufacturing to service industries had produced a significant demand for engineers who can lead and manage the enterprise in all its undertakings. Our experience shows that the most successful people in these activities will be those who have the "entrepreneurial" spirit, the drive to create wealth and the persistency required to make a difference to their own companies. Large and medium sized corporations now search for the *intrapreneur* (an entrepreneurial individual who prefers to work inside a larger firm rather than to start or manage their own) who is expected to lead them to success in the foreseeable future. Today's young people will have to consider the alternative of "doing their own thing" instead of working for someone else. They are intent on doing things in their own way, in their own time, and at a pace that suits them. Entrepreneurs are in control of their own lives; they structure their own progress and are accountable for their own success. After all, engineers are the most capable people to be in charge of the changes required for successful business life in the global economy.

If you have the "talent" for business, but more importantly, if you could hardly wait to leave university and pursue a career in small business, whether you started this yourself, a group of you, or join in the family business, this course is for you. In any case, the skills you will learn here will be very useful in any business where you might pursue a career, even if you are not an entrepreneur.

### **Purpose**

Our approach to teaching is based on real-life business experiences and many years of successful practice of "what we preach". The course contains very little theoretical work or academic approaches. It is designed to familiarise you with the kinds of opportunities (problems) likely to be encountered in an entrepreneurial career. If you really want this lifestyle and are prepared to work hard, we will provide you with the practical knowledge and technical skills required to pursue this kind of career. In today's high-tech world, products have life cycles of 6 months or less, things change at Warp speed, and we follow these changes closely (the Internet, World Wide Web, Information Technology, boomers, boomlets, Gen-X, China, India, etc.). The term project is a full Business Plan and it is intended to give you "hands on" experience in developing a document that is **absolutely essential** if you ever get into business for yourself. Preparing a Business Plan is not a simple exercise, nor an easy "lab report". The preparation of a "professional" BP is a lot of work, something like a half-year undergraduate Thesis. This work is to be done by you, personally, but, there is much help on the Internet, so please feel free to use any/all such assistance – but make sure you give due credit by citing the sources you use. We cannot overemphasise the value of good communication skills, oral in the classroom and written in the reports. In fact, we require that you learn how to present yourself in a business-like manner.

We are convinced that an entrepreneurial lifestyle is not only a reasonable career alternative, but in fact, the most exciting career possible. We speak from experience ("been there, done that")! Becoming a successful businessperson is not inherently limited to a select few. While the spirit may be inborn in some individuals, most people can learn and develop the necessary entrepreneurial skills and knowledge. As you are about to take this course, you should realise that by the time you finish it, you may conclude that entrepreneurship is not for you, but on the other hand, you may find that you just cannot wait to start! We have had dozens of students who did start businesses, some even while they were completing their degrees and a number are very successful today. However, we are not claiming credit for this, they had "what it takes" in the first place, we may have contributed in some way to how quickly they "made it", but eventually they would have made it anyway!

As and when appropriate, we will invite outside visitors from the business community to contribute to the class discussions. The course deals with practical concepts, actual past and current events and we present these concepts from the point of view of someone who has "been there and done it all". All the people who will be lecturing are practising entrepreneurs, are involved in entrepreneurial firms or in a profession that provides services to such companies. This means that what you hear is the **real stuff**. It also means that the course will be more demanding on your time and will require more work than the average course you will have taken in this Faculty. Do not let the 3 contact hours per week, plus the Hatchery Speaker Series (more about this later) fool you into thinking that this is an easy course.

Everything changes rapidly in today's society whether we examine the legal, international, financial or Canadian business environments. Clearly, the end of the first decade of the 21<sup>st</sup> 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 (Facebook, Twitter, LinkedIn, You Tube, WikiLeaks, etc.) and many other events. Canadians are not immune to these changes and must adapt to prosper. The formation of a small business is perhaps the only real opportunity in the 21<sup>st</sup> Century for future successes for many of you – the World has really changed after 9/11 and later following 7/7. And, the "crash" of 2008 – 09 hurt the World economy and only now we are beginning to recover from!

### **Course Organisation**

In your timetable, there are two meeting times, a 3-hour lecture on Mondays and a 1-2 hour “tutorial” period on Tuesdays (see above for locations) – the “Hatchery Speaker Series”. However, the tutorials are not tutorials at all! Each week (actually 8 weeks) on Tuesday at 12:10 we will have a successful Entrepreneur visit and give a talk for about 45-50 minutes on his/her business, life, successes, failures or whatever they want to talk about. Drinks and sandwiches will be provided at 1:00pm. You should come because you are required to report on what the guests said (Guest Speaker Report) – maximum 1 page per guest, submitted just the same way as you submit the Press Reviews (see below). It should be noted that we may also invite former students of our entrepreneurship courses, other classes running at the same time (all 488 classes are there at the same time, plus APS234) and entrepreneurship clubs, etc. Now we know that there may be some timetable problems with this 1- 2 hour event and some of you work so attending this will be a problem, you just have to do the best to trade off time slots or if you can not make it, talk to the instructor for alternative opportunities to get this information. The good news is that you can make it up at other venues and lectures we approve.

Part-time students may choose to substitute the Hatchery Speaker Series attendance and report with an assignment. This assignment is to Interview a Successful Entrepreneur and write an 8-10 page report about what you learned about the entrepreneur and what they believe made them successful. Instructions for this assignment are available on Blackboard but you will need to choose this option by week 2 of the course.

The course is on BLACKBOARD, so you should sign in as soon as possible and read all the handouts already there. We suggest that you print the notes before the lecture, read it and then 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. Except for the Business Plan and the two assignments, all materials will be handed in via Blackboard. Blackboard submission is **required** and will be used for weekly grading.

The final examination will be open book and will draw upon material presented in the course, including the readings from the textbook and class discussions. Complete lecture notes should be printed out as outlined at the start of this document because laptops, table computers or even smart phones are not allowed in the exam. This will also save you most of the note taking, but, since you will not be busy taking notes, you must take an active part in the classroom dialogue.

### **Business Press Review (BPR)**

It is expected that each student reads the appropriate business press (Globe and Mail ROB, the Financial Post section of the National Post, Financial Times, other dailies, Canadian Business, etc.) and prepares a written half to a page (max!) report on their choice of article.

The BPR assignments will automatically show up in BlackBoard under “*Assignments\Press Reviews*” at 11:59PM on the date of the lecture prior to the one in which that BPR is due. The assignment will be available until 12:00AM of the day on which the BPR is due. You have **unlimited** submission attempts.

Example: Your first BPR is due on Monday, September 15<sup>th</sup> and will be available from: Monday, September 8<sup>th</sup> at 11:59PM to Monday, September 15<sup>th</sup> at 12:00AM.

Please do not forget to include the reference from which you took the article. The topics in the papers are to be about economic, political or personal issues effecting small businesses. These may be: a drop (or rise) in interest rates; recently released trade figures; import/export news; currency issues; government actions; approvals of financing; bankruptcies; tax matters, entrepreneurs, success stories, etc., etc. We expect you to write a thoughtful paragraph or two on the issue, more of an analysis than a précis of the article. At the start of each lecture, we will ask up to 5 students to make a 60-second, oral presentation to the class reviewing his/her article from the viewpoint of wealth creation, entrepreneurship and small business (we will provide the student a printout of his/her e-mail at the time). Many times students find the path of least resistance, in this case: that day's edition of the Toronto Star or the websites of the Toronto or other newspapers, TV stations, etc. We get several reports based on the same few articles, the result of which is that you miss the real business news. So, read the "paper" press that is dedicated to business news **every day** even if you do read the Star as well. All successful business people read the financial news every single day!

### **Guest Speaker Report**

This write-up should give an overview of the key things said by the guest speaker (in your opinion). The document should also include your thoughts and opinions on what you heard; try to be insightful and evaluate what you heard in the context of how it can make you a better entrepreneur.

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

Example: The first Guest Lecture Write-up will become available on Tuesday, September 16<sup>th</sup> at 12:00PM and will be available until Saturday, September 20<sup>th</sup> at 12:00AM.

**Students with guest lecture conflicts:** There is a set of password protected alternate guest lecture assignments in “*Assignments/Guest Lectures*”. The T.A. 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 the T.A. did not pre-approve the alternate guest lecture. For those who work and can not make the Tuesday meetings, the Entrepreneur's Biography is available as a substitute. See the Syllabus for the Assignment.

### **In-Class Presentations**

Each student will have the opportunity to make two presentations during the term. The first presentation will be a 90 second “elevator pitch”. An elevator pitch is a 90 second or less sales pitch that will get an important person whom you happen to meet (perhaps in an elevator) and you want him/her to agree to a meeting that will last up to an hour where they will hear in detail

why your business idea is the huge opportunity for them to make money on or improve their business. In each class beginning at lecture 6, 5 or 6 students will be asked to make their elevator pitch. At lecture 12, all students will make a 5 minute business plan presentation describing why their businesses are a great opportunity to create value for their clients and investors. More details will be provided on these presentations during the course of the term but obviously they are directly related to the Term Project, the Business Plan.

### Term Project

Each student will pick his or her own topic to develop a business start-up. The term project involves the preparation of a **full and complete Business Plan** for a company you select as “Your Business”. This requires you to work hard for the information you need. The Business Plan, on the average, will be about 15-25 pages long (cover page, table of contents, Appendices etc. are not included in the count) typed, single-spaced. For more details, see the handout on BLACKBOARD. But, a few comments about the term project are appropriate here:

1. **Do not put it off or delay starting it** because you are busy at the moment, you will run out of time, **for sure!** It is a big job, so there is no time to delay!
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, choose the approach and get to work immediately.
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
6. The Financial section is often a real problem and the BP suffers greatly from this, so take the time required to do this well.
7. A letter of Transmittal (this means a cover letter) is also a requirement.

The term project is a lot of work, at least 80 hours altogether (it has a heavy weight in the final mark), and includes work and research that you have to do in the business world. Get started early and keep at it. We do not accept any excuses whatsoever, the deadline means exactly that - you deliver on time (or before), and no excuses - so do not ask for "understanding"!

### 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 plenty. While we will not reject a late submission, **there will be a 40% discount** on the marks achieved. So, do not be late! Another thing to note is that if you do not hand in the item by the time we return the marked document, we will **not accept it at all!!** If you examine the course schedule you will find several delivery points (you should put these into your timetable right now) where you need to submit one of the assignments or the term project:

Item	Report or Assignment	Due Date
1.	The Proposal for your Business Plan term project (a one-page synopsis of the proposed new business) due.	September 29
2.	Business Find Assignment (hopefully, this will represent your own preliminary analysis of the Business Idea you will write your Business Plan on) due.	September 29
3.	Market Research assignment due today	October 20

4.	Elevator Pitch Presentation – 90 seconds	November 3
5.	The Business Plan is to be handed in to the Instructor, <b>no later than 6:10 p.m.</b> , at or before the <b>start of the lecture</b> . A covering letter recommending whether or not to proceed with the project <u>is required!</u>	December 1

Please respect the fact that we will enforce these dates so do not try to make any excuses because we will not be sympathetic! Needless to say, you must do the work on your own. If team approaches are required, we will tell you about it, otherwise, just get on with the work, on your own. In this regard, we will willingly and always help you in any problem you may have, just set up an appointment and we will make time for you.

The final examination will be a case study where you will have to answer some questions relating to the material you studied but your ability to use what you learned will be more important than what you might have memorised.

### Marking Scheme

Class Participation (including business press reviews)	10%
Assignments: (1) Business Find Assignment	5%
(2) Market Research	5%
Guest Speaker Reports (or Interview an Entrepreneur)	5%
Business Plan	20%
Elevator Pitch	5%
Business Plan Presentation	10%
Final Examination	40%

However, if you think that this is a “bird” course or an easy credit, you are sadly mistaken, - it is not - and if you feel this way, then perhaps you should find an alternative to fill in your free elective.

### 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!

## 2014 LECTURES SCHEDULE ECE488F

<u>Week</u>	<u>Date</u>	<u>Text-Chapter</u>	<u>Topics</u>	<u>Assignments &amp; Project Milestones</u>
1	Sept 8	1 + 2 handouts	Organisational meeting <b>The Entrepreneur and the Canadian Business Environment</b> - Introduction, “Entrepreneur” and The Canadian Business scene	
	Sept 9	N/A	<i>No Guest Today</i>	
2	Sept 15	5	<b>Business Plan and Finding a Business Idea</b> - Business Plan - Business Idea Search	<i>Bus Find Assn. handed out</i>
	Sept 16	N/A	<i>Guest: Gary Mpttershead</i>	
3	Sept 22	6 +notes	<b>Market Research</b> - Source of data	
	Sept 23	N/A	<i>Guest:</i>	
4	Sept 29	7 and 8	<b>Marketing Strategies Promotion and Pricing</b> - Pricing and costing - Advertising, electronic channels	<i>Proposal for Business Plan due</i> <i>Business Find Assignment due</i> <i>Market Research Assignment handed out</i>
	Sept 30	N/A	<i>Guest: TBA</i>	
5	Oct 6	7 and 8	<b>Sales</b> - Sales people and managing them, - Distribution channels and Global marketing	
	Oct 7	N/A	<i>Guest: TBA</i>	
	Oct 13		<b>Thanksgiving Holiday</b>	
	Oct 14		<i>Guest: TBA</i>	
6	Oct 20	A13, 14	<b>Accounting, Financing and Analysis</b> - Sources of funding - Accounting and controls - What you need for the Business Plan	<i>Market Research due today</i>
	Oct 21	N/A	<i>Guest: TBA</i>	
7	Oct 27	9,11, 12	<b>Managing the Business – People</b> - Management Styles - Recruiting and hiring - Legal issues in employment and HR - Location and equipping the business - Suppliers and purchasing, credit - Ethical dealing	
	Oct 28	N/A	<b>Financial Tutorial</b>	

8	Nov 3	N/A	<b>e-Business</b> - What it is about and how you can participate - How to develop a web presence - The problems of on-line business <i>Mid-Term BP is due today</i> <i>Guest: TBA</i>
	Nov 4	N/A	
9	Nov 10	<b>10</b>	<b>Legal issues</b> - Legal forms of organization - Taxation and other matters - Intellectual Property protection <i>Guest: TBA</i>
	Nov 11	N/A	
10	Nov 17	<b>4 and 3</b>	<b>Buying a Business, Franchising, Taking over a Family Business</b> - Buying a business and Franchising - Succession in a Family Business <i>Tutorial and help with the Business Plan.</i>
	Nov 18	N/A	
11	Nov 24	<b>11, 12, 3, 15, 16</b>	<b>Risk Management &amp; the Exit – Succession and Other Options</b> - Exiting the business and succession - Selling out <i>Tutorial and help with the Business Plan.</i>
	Nov 25	N/A	
12	Dec 1		<b>Student Business Plan Presentations</b>

***Business Plan due 6:10 pm - (No Extensions)***

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

## **Resumé**

### **Steven Treiber, Ph.D., P.Eng**

Steve has always had an interest in business. Although he started out working for someone else, he always had an eye on "doing his own thing" – and that he did after just 4 years in the corporate world. So, in 1984, after an engineering career in the pulp and paper and oil industries with Scott Paper and Shell Oil, respectively, he started his own software and engineering firm. Treiber Controls Inc. developed process control and real-time optimisation applications and software for the oil, petrochemical, pulp and paper and other process industries. In 1998 he sold his company to a NASDAQ listed competitor, Aspen Technologies, and served in various senior management roles.

He left Aspen in 2002 to launch a new business start-up – the entrepreneurial drive was still there. He continues to work with technology start-up companies to apply his knowledge and experience in engineering and business. He is now President of Manufacturing Technology Network, Inc.

After receiving a Bachelor of Engineering from McGill University he volunteered to work as a high school teacher in Uganda from 1969-1971. He also holds a Master of Applied Science from the University of Toronto, and a PhD from McGill University, all in Chemical Engineering. He has published over 30 papers in the fields of process control and optimisation.

Steve Treiber is an Adjunct Professor in the Centre for Engineering Entrepreneurship and Innovation of the Faculty of Engineering at McMaster University, Hamilton, Ontario, Canada. He specializes in teaching engineering entrepreneurs how to start up new technology businesses.

## **Resumé**

### **Joseph C. Paradi, Ph.D., P.Eng., FCAE**

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 Dataline Inc. in 1968. The company was financed with a \$2.7 million dollar public underwriting of shares (March 1969). 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 in Chemical Engineering and Applied Chemistry. He teaches graduate level Management Information Systems and Management of Technology 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 close to 60 graduate students, papers published and presented and conference contributions. More information is on the Web: [www.cnte.utoronto.ca](http://www.cnte.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 and 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, 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.