



School of Energy Systems and Nuclear Engineering

Business Plan

Master of Engineering and Master of Applied Science in Nuclear Engineering

Start Date: September 2008

Rationale for the New Programs:

The rationale for offering these programs is outlined in the submission to the UOIT's Graduate Studies Committee (GSC). Both the market demand and the attractiveness of the programs are discussed in the above-mentioned document. Furthermore, having the MAsc submitted to OCGS is the prerequisite for submitting the proposal for the NSERC-UNENE IRC (\$2M) in Health Physics and Environmental Safety. Having both programs submitted to OCGS this summer is a major deliverable under the OPG Partnership Agreement.

This is the business plan for the new Masters (MEng and MAsc) programs in Nuclear Engineering to be offered by the School of Energy Systems and Nuclear Science beginning in the Fall semester 2007.

Enrollment Projections and Business Plan Assumptions: MEng & MAsc

We propose a scenario that we believe to be the most likely for enrollment in the program as a "Most Likely Scenario". The enrolment corridors have been confirmed to be realistic by the Registrar's office. A "Break Even Scenario" is also attached.

The following assumptions were included in the development of both scenarios:

- [0] Tuition for the programs is set to the 2008 posted domestic tuition : \$6,299 (FT); \$3150 (PT)
- [0] Enrollment for the second year to be 90 % of the first year enrollment. 50% of the students will stay for six instead of five terms.
- [1] Full Operating Grant is set at \$12,680 / annum for a maximum of two years. Part time tuition is 50% of full time tuition and operating grant is 0.3 of the operating grant (thus allowing the student to stay five instead of two years). Part Time students stay a maximum of five years.
- [1] International tuition per three semesters is set at 2008 posted international tuition: \$18,743/year.

- [2] [8] Faculty Salary Cost is set to \$90,000 plus 18.5% in benefits for full time faculty.
- [3] Part-time faculty costs are set at \$7,500 per course; the intention is to deliver 50% of the curriculum in each year. The delivery of courses will mainly be covered by full-time School or Faculty of Engineering & Applied Science faculty or full-time faculty from other UOIT faculties (Science). Sessional faculty will be drawn from industry and have typically have experience with delivering undergraduate courses for the School in previous years and/or delivering graduate courses at other universities.
- [4] There will be no or minimal TA cost for the program as graduate courses rarely if ever require such support.
- [5] Graduate Research Awards will be provided and estimated to be \$3000.00 per student. The individual GRA will be awarded according to merit and the intention is to provide total funding (including Teaching Assistantships, external granting agencies) for graduate students to \$16,000 per annum.
- [6] Technical support staff will be added to support the programs. There will be one technical support staff person added when the program has grown to capacity. Although funding for graduate research infrastructure is expected to come from research grants, there will still be a need to maintain a minimal centralized support infrastructure.
- [7] The program will be supported, at capacity, by an additional administrative staff resource.
- [8] Benefits are calculated as 18.5% for full-time faculty/staff and at 11% for all others.
- [9] Although the majority of laboratory needs will be satisfied either with existing undergraduate labs or through research grants, some additional equipment will be required to supplement the undergraduate teaching labs for their use in graduate studies in cases where the scale of the procurement would not warrant applying for an equipment grant.
- [10] A phased-in cost of \$20,000 is assumed for additional teaching resources. This includes hiring of guest lecturers, technical consultants, instructional materials, etc. to support the programs (adjusted for the break-even scenario).
- [11] A phased in cost of \$20,000 is included as miscellaneous expenses. This line items anticipates the need for supplies for the grad programs including travel to promote the programs, faculty and students conference support, office and classroom supplies, journal acquisition and publication materials. (adjusted for the break-even scenario).
- Note that inflation factors are not built into the model although some costs would be expected to rise with inflation.

The references [#] are to the excel spreadsheets for the two scenarios that are attached.

MASc/MEng REVENUE CALCULATION (MOST-LIKELY) BASED ON ENROLMENTS

MEng & MASc -- Domestic Students

		Revenue
		\$
GRANT - FT Three Terms		\$ 12,680
GRANT - PT		\$ 3,804
Tuition at \$1,944 per term		\$6,299
Total Revenue		\$ 18,979

International Students (revenue \$)

2008-09	2009-10	2010-11	2011-12	2012-13
\$ 18,743	\$ 18,743	\$ 18,743	\$ 18,743	\$ 18,743

Part-Time Tuition		\$3,150
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Table 1 Projected Intake and Enrolments for MASc and MEng Programs:

YEAR	International MASc	International MEng	FULL-TIME DOMESTIC				PART-TIME DOMESTIC			
			Intake		Enrolments		Intake		Enrolments	
			MASc	MEng	MASc	MEng	MASc	MEng	MASc	MEng
2008	1-3	1	5-10	5-10	5-10	5-10	1-3	5-10	1-3	5-10
2009	1-3	1	10-15	5-10	15-25	10-20	1-3	10-15	2-6	20-25
2010	1-3	1	10-15	5-10	20-30	10-20	1-3	15-20	3-9	30-45
2011	3-6	1-2	10-20	10-15	20-35	10-25	1-3	15-20	3-9	30-45
2012	3-6	1-2	10-20	10-15	20-40	10-30	1-3	15-20	3-9	30-45
2013	3-6	1-2	10-20	10-15	20-40	10-30	1-3	15-20	3-9	30-45
2014	3-6	1-2	10-20	10-15	20-40	10-30	1-3	15-20	3-9	30-45

PROJECTED " MOST LIKELY" SCENARIO

	New Enrolment		Cumulative Enrollment			Cumulative Full-time Faculty Equivalents (F.T.E.)	Cumulative Part-time Faculty Equivalents (F.T.E.)	Additional Support Personal		Government Grant	Tuition	Total Revenue
	Full-time	Part-time	Full-time	Part-time	Total			Admin Tech staff	Staff			
2008	15	8	15	8	23	0	2	0.5	0.5	220,632	119,681	340,313
International 2008	3		3								56,229	56,229
2009	20	14	31	22	53	1	2.5	1	1	479,938	266,133	746,071
International 2009	3		6								112,458	112,458
2010	20	20	35	42	77	2	2.5	1	1	603,568	352,744	956,312
International 2010	3		6								112,458	112,458
2011	27	20	42	54	96	2	2.5	1	1	737,976	434,631	1,172,607
International 2011	6		9								168,687	168,687
2012	27	20	47	60	107	2	2.5	1	1	827,370	486,598	1,313,968
International 2012	6		12								224,916	224,916
2013	27	20	47	60	107	2	2.5	1	1	827,370	486,598	1,313,968
International 2013	6		12								224,916	224,916

Assumptions:

- a. 90% retention rate from first to second year
- b. 50% of second year students take 6 terms to graduate
- c. Cumulative FT Enrolment = New Intake + (90% of 5/6 of the previous year's intake)
- d. Part-time students are funded at 50% of the FT students and stay for 5 years
- e. Government grant is calculated as: $12,680 * \text{Cumulative FT enrolment} + (.3 * 12,680) * \text{Cumulative PT enrolment}$
- f. Tuition = $5832 * \text{cumulative FT enrolment} + (1/3 * 5832) * \text{cumulative PT enrolment}$
- g. International students -- numbers are reflected as 30% of the thesis-based (MAsc) program and 10% of the course-based domestic numbers

PROJECTED "MOST LIKELY" REVENUES AND EXPENSES

	2008	2009	2010	2011	2012	2013
Total Revenue [0,1]	\$ 396,542	\$ 858,529	\$ 1,068,770	\$ 1,341,294	\$ 1,538,884	\$ 1,538,884
EXPENSES						
Salaries						
Faculty [2]	\$0	\$90,000	\$180,000	\$180,000	\$180,000	\$180,000
Part-Time Faculty [3]	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000
Course Cost to other Facs [3]	\$0	\$0	\$0	\$0	\$0	\$0
Teaching Asst [4]	\$0	\$0	\$0	\$0	\$0	\$0
Graduate Research Awards [5]	\$45,000	\$93,000	\$105,000	\$126,000	\$141,000	\$141,000
Tech Support Staff [6]	\$32,500	\$65,000	\$65,000	\$65,000	\$65,000	\$65,000
Admin Staff [7]	\$21,250	\$42,500	\$42,500	\$42,500	\$42,500	\$42,500
Benefits [8]	\$10,863	\$33,425	\$50,075	\$50,075	\$50,075	\$50,075
Sub-Total	\$154,613	\$368,925	\$487,575	\$508,575	\$523,575	\$523,575
Ratio	38.99%	42.97%	45.62%	37.92%	34.02%	34.02%
Equipment[9]	\$10,000	\$10,000	\$20,000	\$30,000	\$30,000	\$30,000
Other Teaching Rsrc [10]	\$10,000	\$10,000	\$20,000	\$20,000	\$20,000	\$20,000
Miscellaneous [11]	\$10,000	\$10,000	\$20,000	\$20,000	\$20,000	\$20,000
Total Expenses	\$184,613	\$398,925	\$547,575	\$578,575	\$593,575	\$593,575
Ratio	46.56%	46.47%	51.23%	43.14%	38.57%	38.57%
Net Revenue	\$211,930	\$459,604	\$521,195	\$762,719	\$945,309	\$945,309

MASc/MEng REVENUE CALCULATION (BREAK-EVEN) BASED ON ENROLMENTS

MEng & MASc -- Domestic Students

		Revenue
		\$
GRANT - FT Three Terms		\$12,680
GRANT - PT		\$3,804
Tuition		\$6,299
Total Revenue		\$18,979

International Students (revenue \$)

2008-09	2009-10	2010-11	2011-12	2012-13
\$ 18,743	\$ 18,743	\$ 18,743	\$ 18,743	\$ 18,743

Part-Time		\$3,150
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Table 1 Projected Intake and Enrolments for MASc and MEng Programs:

YEAR	International MASc	Internationa I MEng	FULL-TIME DOEMSTIC				PART-TIME DOMESTIC			
			Intake		Enrolments		Intake		Enrolments	
			MASc	MEng	MASc	MEng	MASc	MEng	MASc	MEng
2008	1	0	3	3	3	3	1-3	5-10	1-3	5-10
2009	1	0	4	3	7	6	1-3	10-15	2-6	20-25
2010	1	0	4	3	7	6	1-3	15-20	3-9	30-45
2011	2	0	4	3	7	6	1-3	15-20	3-9	30-45
2012	2	0	4	3	7	6	1-3	15-20	3-9	30-45
2013	2	0	4	3	7	6	1-3	15-20	3-9	30-45
2014	2	1	4	3	7	6	1-3	15-20	3-9	30-45

PROJECTED BREAK EVEN SCENARIO

	New Enrolment		Cumulative Enrollment			Cumulative Full-time	Cumulative Part-time Faculty Equivalents	Additional Support		Government Grant	Tuition	Total Revenue
	Full-time	Part-time	Full-time	Part-time	Total	Faculty Equivalents (F.T.E.)	(F.T.E.)	Tech staff	Admin Staff			
2008	6	5	6	8	14	0	2	0	0	106,512	62,990	169,502
International 2008	1		1								18,743	18,743
2009	7	9	12	17	29	0	2.5	0.5	0.5	210,488	125,980	336,468
International 2009	1		1								18,743	18,743
2010	7	15	12	32	44	0	2.5	1	0.5	277,058	177,947	455,005
International 2010	1		1								18,743	18,743
2011	7	15	12	42	54	1	2.5	1	0.5	315,098	209,442	524,540
International 2011	2		2								37,486	37,486
2012	7	15	12	48	60	1	2.5	1	1	337,922	228,339	566,261
International 2012	2		2								37,486	37,486
2013	7	15	12	48	60	1	2.5	1	1	337,922	228,339	566,261
International 2013	2		2								37,486	37,486

Assumptions

- a. Basic assumption is that the full-time program is not taken up but the part-time program is relatively successful
- b. 90% retention rate from first to second year
- c. 50% of second year students take 6 terms to graduate
- d. Cumulative FT Enrolment = New Intake + (90% of 5/6 of the previous year's intake)
- e. Part-time students are funded at 50% of the FT students and stay for 5 years
- f. Government grant is calculated as: $12,680 \times \text{Cumulative FT enrolment} + (.3 \times 12,680) \times \text{Cumulative PT enrolment}$
- g. Tuition = $6299 \times \text{cumulative FT enrolment} + (0.5 \times 6299) \times \text{cumulative PT enrolment}$
- h. International students -- numbers are reflected as 30% of the thesis-based (MAsc) program and 10% of the course-based domestic numbers

PROJECTED "BREAK EVEN" REVENUES AND EXPENSES

	2008	2009	2010	2011	2012	2013
Total Revenue [0,1]	\$ 188,245	\$ 355,211	\$ 473,748	\$ 562,026	\$ 603,747	\$ 603,747
EXPENSES						
Salaries						
Faculty [2]	0	0	0	\$ 90,000	\$ 90,000	\$ 90,000
Part-Time Faculty [3]	\$45,000	\$75,000	\$75,000	\$45,000	\$45,000	\$45,000
Course Cost to other Facs [3]	\$0	\$0	\$0	\$0	\$0	\$0
Teaching Asst [4]	\$0	\$0	\$0	\$0	\$0	\$0
Graduate Research Awards [5]	\$18,000	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000
Tech Support Staff [6]	\$0	\$32,500	\$65,000	\$65,000	\$65,000	\$65,000
Admin Staff [7]	\$0	\$21,250	\$42,500	\$42,500	\$42,500	\$42,500
Benefits [8]	\$4,950	\$14,163	\$20,075	\$33,425	\$33,425	\$33,425
Sub-Total	\$67,950	\$178,913	\$238,575	\$311,925	\$311,925	\$311,925
Ratio	36.10%	50.37%	50.36%	55.50%	51.66%	51.66%
Equipment[9]	\$15,000	\$10,000	\$17,500	\$10,000	\$20,000	\$30,000
Other Teaching Rsrc (10)	\$15,000	\$10,000	\$14,000	\$8,800	\$20,500	\$15,000
Miscellaneous [11]	\$15,000	\$14,300	\$14,000	\$6,500	\$10,000	\$5,500
Total Expenses	\$112,950	\$213,213	\$284,075	\$337,225	\$362,425	\$362,425
Ratio	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Net Revenue	\$ 75,295	\$ 141,999	\$ 189,673	\$ 224,801	\$ 241,322	\$ 241,322