Course Outline 2017
COMENT 705: PROJECT IN COMMERCIALISATION (45 POINTS)

Quarter 2 and 3 (1174 and 1176)

Course Prescription

A supervised project requiring the application of knowledge and skills for the commercialisation of a creative application of science and technology. The commercialisation project will involve the identification and analysis of complex, open-ended problems and issues associated with commercialisation. A written commercialisation report will present findings and a plan for commercialisation. Projects will be sourced from universities, CRIs and science and technology based enterprises.

Prerequisites

COMENT 703, 704, 706 and 708.

Goals of the Course

The main goal of the course is for students to develop an in-depth understanding of how to commercialise science and technologies by working with projects from universities, CRIs and technology based enterprises. While also gaining practical experiences, the students will develop the understanding from reflecting, applying, contrasting, and comparing theories and concepts taught in COMENT 703, 705, 706 and 708 to a hands-on project. Moreover, the students will also develop project management skill to enable them to scope and plan commercialisation, set milestones and to prepare and communicate material in both written and oral forms to create value for stakeholders.

Learning Outcomes

By the end of this course it is expected that students have developed the following competences in relation to the particular project and client:

1. Plan for effective research commercialisation project management.
2. Undertake validation and valuation and develop strategies for commercialisation pathways and risk and contingency management in a highly uncertain and unstructured environment.
3. Be able to apply and reflect on theories and concepts learned in COMENT 703, 704, 706 and 708 to analyse challenges and derive recommendations.
4. Engage in team effort, develop and engage in knowledge sharing and learning practices, perform to the expectation of peers and manage intra-group relationships and conflicts.
5. Compose and present their work in both written and oral form to various stakeholders throughout the project.

Teaching and Learning

This course is based around practical research commercialisation projects. Each project will be different and will be associated with different challenges. This course is intended for students to gain some practical experiences with research commercialisation. The teaching and learning components are designed to allow students to engage in reflective, experimental and peer-to-peer learning, feedback activities and knowledge sharing.

To assist with the project management, the students will be introduced to an online tool called *Basecamp*. Basecamp will be instrumental in the course for the facilitation of knowledge sharing and peer-to-peer learning. A demonstration of Basecamp will take place in the first workshop.

Teaching and learning are divided into three components: (1) Workshops, (2) individual and team learning, and (3) supervision.

a) Workshops

The first workshop will introduce some systems and techniques for enabling project management, learning and knowledge sharing. The second workshops will provide the students with some basic tools and methods to undertake primary and secondary research and determine commercialisation pathways. During the third workshop the students will make a presentation of their technology and the project scope. Workshops 4, 5 and 6will serve as an interactive forum where students and experts will be present to discuss particular topics related to each group and project. At the final workshop, the students will be presenting their report to the client and a panel of judges. All classes are scheduled from 3 – 6 pm. Dates for the workshops are listed below.

	Time	Topic	Content
1	7 April 3-6pm Case room 1/260-005	Introduction	• Formation of groups • Project management
2	21 April 3-6pm Case room 1/260-005	Workshop	• Research and market validation • Commercialisation Strategies
3	5 May 3-6pm Case room 1/260-005	Workshop Project scope presentation	• Group based workshop • Presenting the project scope and white paper of the technology
4	2 June 3-6pm Case room 1/260-005	Project presentation	• Presenting early outcomes of ideation and early market validation
5	30 June 3-6pm Case room 1/260-005	Milestone presentation	• Presenting outcomes of ideation and market validation (assessed by external panel)
6	28 July 3-6pm Case room 1/260-005	Milestone presentation	• Presenting tentative pathways and strategies (assessed by external panel)
7	25 August 3-6pm Case room 1/260-005	Presenting the report	• Present final report to stakeholders (assessed by external panel)

Reading and teaching material will be available via Canvas prior to each workshop.

b) Individual and team learning

Individual and peer-to-peer learning are important aspects of this course. To keep track of the learning the students will be required to manage a *Commercialisation Log*, which will be integrated into *Basecamp*. The commercialisation log will consists of two parts: (1) a *Project Log* that is accessible by all team members, project sponsor and Instructors, and (2) a *Personal Log* that is accessible only to each individual student and the Instructors.

The logs will make up assignment 1.

c) Supervision

This is a supervised project. The Instructor will be responsible for providing or facilitating supervision for each project. The primary responsibility of the supervisor of this course is to ensure overall guidance to the project teams to ensure the projects stay on track and

within the scope of the course and the expectations of the Project Sponsors. The following identifies the key functions of the supervisor in this course:

  a) Provide overall guidance of the project in form of clear instructions of purpose and scope to both students and Project Sponsors.

  b) During workshops, advise students to relevant areas of information and appropriate techniques and methods.

  c) Regularly monitor the progression of each project in Basecamp.

  d) Provide feedback to students for each assessment in either written or oral form.

  e) Mediate in case of conflicts between Project Sponsor and Project Team.

No time have been set aside for individual/group consultations or supervision outside the workshops and Basecamp. However, in case of unexpected circumstances please contact the Instructor to discuss further.

d) Quarter Break

A Quarter Break has been scheduled from 5 – 18 June. You are not expected to be working on the project during this period.

Description of projects
Project description
Projects will be sourced from universities, CRIs or science and technology based enterprises. The projects will be around technologies or research output that recently have been disclosed but yet belong to an early research commercialisation stage with some initial understanding of the commercial potential of application. More details of the projects will be circulated to the students prior to the first workshop.

The students will be working directly with the project sponsor. Contact to the project sponsor should be initiated after the first workshop.

Research involving human participants (including teaching sessions, laboratories, anonymous questionnaires, research carried out as part of coursework) must receive approval from the University of Auckland Human Participants Ethics Committee (UAHPEC). For COMENT 705, Ethics have been approved under the reference number 8137, which means that students in this course are allowed to undertake research involving human participants. However, the students must follow the procedure specified by the UAHPEC, which involves informing the participants about the purpose of the research (Participant Information Sheet) and have them to sign a consent form before partaking.

The Participation Information Sheet and the Consent Form have been prepared and the student should not undertake any research that relates to the projects and involves human participants before the first workshop.

Team formation
The teams will be formed in the first workshop. The students are advised to prioritise the project according to their preferences prior to the first workshop. To the extent possible the teams will be formed based on the students preferred choice. In case of conflicts of interest a student might be restricted to work for certain projects.

When the teams are formed, each team is required to align, discuss and write down a *Team Agreement*. Instructions to the *Team Agreement* can be found under *Assessments.*

Instructors

Dr Brian Karlson (Course Coordinator)
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Consultation by appointment

Dr Cristiano Bellavitis
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Consultation by appointment

Other faculty staff and external experts will be involved on an ad-hoc basis.

Assessment

The students will be assessed on (1) their input to the project, (2) the actual output of the project and its value to the project sponsors, and (3) their ability to reflect on the learning process. An overview and the weighting of each assessment is shown below:

Assessment	Type	Associated learning outcomes	Weighting	Due date
1 Commercialisation log a) **Project Log** b) **Personal Log**	Individual	1, 4, 5	15% + 15%	Continuously
2 Scope of project, Team Agreement, White Paper of the technology	Team	1, 4	10%	5 May
3 Milestone presentations	Team	5	5% + 5%	30 June and 28 July
4 Final presentation	Team	5	10%	25 August
5 Final report **(20/40 points peer assessed)**	Team	2, 3	40%	25 August 28 August (Peer assessment)

Grade Criteria

Grade	%	Meaning
A+	90+	Rare, outstanding
A	85-89	Exceptional and beyond what was expected
A-	80-84	Excellent
B+	75-79	Polished and very good
B	70-74	Covers everything that was expected, comprehensive; demonstrated good understanding
B-	65-69	Good coverage but minor flaws
C+ **C**	60-64 55-59	Demonstrated adequate understanding of fundamentals, but some gaps
C-	50-54	Just adequate
D+ **D**	45-49 40-44	Inadequate and lack of Understanding
D-	0-39	Very poor

COMENT 705 Assessment 1: Commercialisation log	• Type: Individual • Weight: 15% + 15%	Due date see below

Assessment description
The commercialisation log is an on-going assessment of the student's input into the process. It is expected that each student continuously work on the project throughout the project period.

The commercialisation log consists of two components: (1) A Project Log that is accessible to the team, Instructors and selected external stakeholders and (2) a Personal Log that is only accessible to each individual team member and the Instructors.

Assessment deadlines
It is recommended to update the log regularly and not to wait to the last minute. The deadlines for the updates and mark allocations are as follows:

	Personal Log Allocated marks	Project Log Allocated marks
4 May	3	3
1 June	3	3
Quarter Break (5.6-18.6)		
29 June	3	3
20 July	3	3
17 August	3	3
Total	15 Points	15 Points

As both logs are introduced to ensure continuously learning, late submissions are not accepted. In case of late submissions they will count towards the next deadline.

Assessment criteria for the Project Log
The Project Log ensures that the individual student is assessed on his/her <u>continuous contributions</u> to the overall project.

Contributions to the project can take various forms:

- Updates on assigned tasks,
- Completed assigned tasks and informed group of outcome,
- Suggestions, comments or constructive feedback to team members,
- Useful resources and documents uploaded to the log, etc.

You **must** provide a summary of your contributions by the end of the assessment period and before the deadline. The summary should be in bullet points and posted in your Personal Log. The Project Log summary has two main purposes: (1) a mechanism for the student to make a stock take of how much has been achieved in the assessment period and (2) to direct the assessor to the key contributions that should be assessed. The Project Log summary must be submitted to receive any marks. But the actual assessment is based on the actual contributions to the project within the assessment period. See below.

The Project Log will be assessed as follows:

	Full marks	Half marks	Zero marks
As a minimum, each student is required to provide updates as per the schedule on assigned and completed tasks. Failure not to provide any input will automatically lead to zero marks. Marks will be given in the range of 0-3.	• Informative • Analytic • Constructive • Adds value to progress and team	• Informative • Descriptive	• No input

***Example** on update on assigned tasks:*

Hi team,

I am half way through with the market validation. As per discussions I emailed Mark Hardie from the ICEHouse to begin with for some tips on how to approach this task. He was very helpful and pointed me in different directions. He also sent through some useful learning resources, which I have uploaded to Basecamp. So far I have gathered market intelligence to help assess market share and market value for 3 out of the 4 markets we have decided to investigate. The interim report is attached. I should still be on track to complete this task, but it all depends on how difficult it will be to set up further meetings with industry experts the next couple of weeks. It would be great if anyone knows of someone in the food industry that might be interested in the Sensor Technology that we could interview. Please let me know.

***Example** on completion of assigned tasks:*

Hi All,

I have completed the analysis of the IP landscape. My full analysis including descriptions of the approach is attached. In summary:

- *In general the market for turning feedstock into chemicals or fuel is competitive with thousands of actors.*
- *However, the market is highly concentrated around using sugars as a feedstock, which is turned into either chemicals or fuel.*
- *Only very few actors are using gas as a feedstock. Those present in that area are attempting to turn gas into full and not chemicals.*
- *From a perspective of "Freedom to operate", I would recommend to investigate the market for gas to chemicals further.*

Regards

***Example** on suggestions, comments or constructive feedback to team members:*

Hi Peter,

Your analysis of the IP landscape is very insightful. While I think the gas-to-chemicals is worth further investigation, I think we have to be very cautious with jumping the gun here. I was wondering if we could find out why no-one else to-date has tried to explore this market previously. Is it because no-one else have thought about it (which I doubt)? Are there some technical or regulatory restrictions? Or has it just proven not financial feasible? I suggest we spend more time on validating the market from a technical perspective. What do you guys think?

***Example** on useful resources and documents uploaded to the log, etc.*

Hi Team,

I came across a report outlining the strategic focus of the NZ Government from 2014-2020. These are the key points from the report that might be of interest to us.

…
…
…

Especially I would recommend all to read section C + D (p. 12-25). Let's discuss at our next meeting.

Assessment criteria for the Personal Log
The Personal Log forms basis for assessing the <u>reflection in the learning process</u> of the individual student.

Reflection is important to the learning process as it enables us to learn from our experiences. Developing reflective learning routines means developing ways of reviewing our own learning to ensure continuous development, which is an important learning objective of this course.

The Personal Log is a tool to help you structure your reflective learning and receive feedback from the Instructor on the process. The reflective learning involves four different processes:

1. Concrete experience
2. Reflective observation
3. Abstract conceptualisation
4. Active experimentation

Start each of the paragraphs in your Personal Log with a reference to one of the learning cycles above (as illustrated below).

A log should be between 500-1,000 words. However it comes down to the quality rather than quantity of the log.

Assessment criteria for the Personal Log are as follows:

	Full marks	Half marks	Zero marks
You are required to update your Personal Log as per the schedule. Failure to provide any input will automatically lead to zero marks. Marks will be given in the range of 0-3.	• Involves minimum three of the four learning processes • Originate from an experience/ challenge relevant to the project • More than 3 references to past learning in the programme (COMENT 703,4,6 or 8) and literature	• Involves minimum two of the four learning processes • Originate from an experience/ challenge less relevant to the project • No or less than 3 references to past learning in the programme (COMENT 703,4,6 or 8) and literature	• No input

Example on Personal Log

1 March 2016

Concrete experience
I have been assigned the task to identify possible commercialisation pathways for the technology. Initially within the group and with the client we discussed license agreements to be the preferred option but also other options were discussed such as partnerships and joint ventures.

My experience with commercialisation pathways is mainly theoretical from COMENT 703. Different pathways provide different advantages, e.g. licensing provide a more immediate and constant revenue stream to the owner compared to continuing developing the technology internally or with external partners, which involves more risk but also potential higher return on investment.

Reflective observation
This was the starting point for our discussion, but it made me wonder what actually determines what commercialisation pathway to choose. To me it does not seem to be pre-determined or a discrete choice. Especially I recall our discussion from COMENT 704 on uncertainty and effectuation that the path ahead sometimes is not to be discovered but created, which support that we cannot just decide on a pathway just like that

Abstract conceptualisation
The same thing applies to our project. Our discussions are not really relevant as they have been around which pathway is most attractive, and not about what pathway is actually available and feasible. At the end I would suspect that the pathway depends on whether anyone actually wants to buy or license our technology, or what we need to improve to make it attractive to the market. This is quite opposite of what I got out of session 4 in COMENT 703

Active experimentation
I sat out to test my assumption about commercialisation pathways by asking potential customers if they would like to buy our technology. My approach is inspired by the effectuation logic from COMENT 704, which is applicable to highly uncertain situations. The reactions from all the potential customers were that the technology has a lot of possibilities. But these possibilities are best explored in a partnership with the technology owner and the customer rather than through a license agreement, because the technology is not well understood and requires substantial further development at this stage. One customer was particularly interested and would like to set up a joint venture with our project sponsor which involves sharing cost to further R&D

The conclusion of this whole exercise is that commercialisation pathways is not something that is decided on by the inventor, but something that is created over time via market interactions [Beginning of new cycle].

Examples of topics suitable for the Personal Log

Technology assessment
- How much of the science need to be understood to undertake commercialisation hereof?
- The importance of engaging the inventor in early stage research commercialisation
- Using patent landscapes to understand the scope of the technology

Ideation
- Ideation exercise – identify potential areas of application
- What framework is most suitable to screen and select ideas for application?
- How to navigate in fuzzy front-end? Or how to navigate in uncertainty?

Research and market validation
- How to develop a validation guide?
- How to identify and contact experts for validation?
- How to interpret the outcomes of validation?
- Scoping the size of the market
- Identifying the 'buyers' vs the 'users'

Pathways to market
- Mapping the value chain
- Risk vs reward
- Imperfection in the innovation system
- Funding opportunities for early stage commercialisation

Before attempting on writing your first reflection, you are advised to read the following reading:

- Kolb, D. A. (1984), "Experiential Learning: Experience as the source of learning and development", Prentice-Hall, Englewood Cliffs, N.J.

- A short online description of the four learning processes can be accessed via this link: http://www.ldu.leeds.ac.uk/ldu/sddu_multimedia/kolb/kolb_flash.htm

- Daudelin, M. W. (1996), "*Learning from experience through reflection*", Organizational Dynamics, Vol. 24(3), pp 36-48

COMENT 705 Assessment 2: Scope of project, White Paper on the Technology and Team Agreement	• Type: Group • Weight: 10%	• Due date 4 May 2017

Assessment description

The group has to submit a brief 'project scope' document, signed by the project sponsor and the team members. The document should outline the specific requirements agreed with the project sponsor. This is a critical activity – it is vital that you deliver a clearly articulated project scope as it will be used as the benchmark to assess your final report and presentation. The team agreement can be used to benchmark individual team member's contribution during peer assessment.

Submission instructions
- Upload Scope of Project, White Paper and Team Agreement as three separate documents to Basecamp
- Add all deadlines and milestone dates to the calendar in basecamp
- Create sub-projects and assign individual tasks and responsibilities in basecamp

Minimum content for the Project Scope
1. Purpose of project
   o Outline the overall purpose of this project for both Project Provider and team

2. High level project plan
   o Monthly or weekly working plan
   o Set dates for key milestones/deliverables

3. Exclusions or key assumptions
   o Agreed exclusions from project
   o Include justification of critical key assumptions

4. Possible risks and how to mitigate them
   o Address any known project risks and how to address these if they should occur

5. Responsibilities of project sponsor and team
   o Discuss responsibilities of project sponsor and team
   o Also include rules or expectations on how to use Basecamp

6. Project reporting
   o When and what to report to project sponsor

7. Signature of project sponsor and team

Minimum content for the White Paper

1. **Introduction** - this opening section covers the high-level issues and trends in the industry that you are involved with.
2. **High Level Solution** - this describes the relevant technologies at a high-level, especially those you have designed and intend to promote. Support your arguments with tables, charts, and graphics. All of these add weight to your argument and provide a contrast to the main text.
3. **Solution Details** - this explains how the service and technology works. This is the heart of the white paper. It provides very detailed descriptions of the proposed solution. You can also use tables, charts, and graphics for this section, with cross-references to external supporting documents if required.
4. **Potential Business Benefits** - This discusses potential business models, pathways to market, and return on investments, usability, and adherence to standards.
5. **Summary** - close the paper with a concise summary of your main points.

Remember that your White Paper is written with the purpose of explaining the technology to the market. It is not a technical guide or scientific paper. Distil the White Paper into one page (ex. figures, tables) with the most important point that you want the reader to remember.

Minimum content for the Team Agreement

1. Defining team purpose and individual goals
   - To ensure all team members are in agreement as to what is the objective
   - Establish a direction or a goal
   - Help prioritise what the team should spend time on

2. Defining team members competencies
   - Help the team understand its strengths and weaknesses
   - Make sure that the team can lift purpose and individual goals
   - Determine the team's ability to handle task in case of an absent team member
   - Identify future training

3. Defining team norms
   - Define what is acceptable and unacceptable behaviour of the groups
   - Give directions to the peer-to-peer assessment

4. Identify team roles and responsibilities
   - Spell out explicitly the team member responsibilities related to the project
   - Create an action plan that sets into motion tasks that will enable the team to achieve the purpose, milestones and individual goals

5. Create a communication plan
   - How the team members will communicate between themselves
   - Set up *rules of engagement* for communication with external stakeholders
   - Set up additional rules for communication within the team

6. Signature of all team members

Assessment criteria Project Scope, White Paper and Team Agreement

	Full marks	Half marks	Zero marks
Marks will be given in the range of 0-10.	• Followed submission instructions • Strong and well-articulated scope, paper and agreement • Supporting argumentations when applicable	• Followed submission instructions • Superficial scope, paper and agreement • Some supporting arguments	• No or only partial submission

COMENT 705 Assessment 3+4: Milestone and Final presentation	• Type: Group • Weight: 5% + 5% (milestone) • Weight: 10% (final presentation	Due dates • 30 June and 28 July for milestone presentations • 25 August for final presentation

Assessment description

Each group is required to present its work in progress twice during the project period. The *Milestones Presentations* are to take place during the allocated workshops on 30 June and 28 July. The first milestone presentation should primarily relate to the outcome of your work around ideation and early market validation. The second milestone presentation should primarily relate to the outcome of your work around pathways and commercialisation strategies. The Milestone Presentations should be 10-12 minutes long. Additional 10 minutes will be allocated to questions. Each team will present in front of a small panel. All students are expected to attend all the presentations.

The *Final Presentation* takes place on the 25 August. The format for the Final Presentation is 15 minutes and 10 minutes for questions and discussions. At the Final Presentation there will also be a panel and the Project Sponsors will also be invited. Hard copy of the Final Presentation material has to be attached to the Final Report.

Students are required to attend the presentations of the other groups.

Assessment criteria

Marks will be given in the range of 0-5 for each Milestone Presentation and 0-10 for the Final Presentation.	Bad	Good	Excellent
• Analysis and assessment relevant to topic, thorough, insightful, creative and appropriate.			
• Findings, conclusions and recommendations are clear, focused well, supported, practical and actionable.			
• Questions and feedback are addressed appropriately and professionally.			
• Presentation is professional, well-delivered and within time.			

COMENT 705 Assessment 5: Final report	• **Type: Group**
	• **Weight: 40% in total**
	  ○ **20% for the report**
	  ○ **20% for peer assessment**
		Due dates
		• **Report 25 August 2017 @ 3 pm**
		• **Peer assessment 28 August 2017 @ 4 pm**

Assessment description

The report is benchmarked against the project scope. The report must be (a) concise-but-thorough, (b) produced in an appropriate professional style and format, and (c) not more than 100 pages in length (excluding references, Times New Roman 12, double spaced, 2cm margins). If essential to your arguments, your report may be supplemented by not more than 25 additional pages of supporting evidence and exhibits.

You will submit: (a) three bound copies of your report, (b) three hard copies of your presentation slides, and (c) a digital copy of your report via email to the Instructors.

Please submit all hard copies to the lecturer during the oral assessment.

Assessment criteria

Component	Bad	Good	Excellent
Report: specific application • **Project scope met** • **Depth and breadth of analysis** • **Clever, insightful** • **Well-justified** • **recommendations/conclusions** • **Use of quantitative data to support** • **rationale, when/if required** • **Potential enhancements**			
Report structure and documentation • **Concise-but-thorough** • **Clear, well-written and informative** • **Appropriate supporting exhibits** • **Well-documented; appropriately cited** • **Within prescribed length**			
Value-added • **Value to the project sponsor**			

Peer assessment

Peer assessment is your opportunity to communicate to your peers about their contribution toward the hands-on project. The peer assessment must be submitted on time, or no marks will be awarded.

You will allocate marks across your team mates, and you must give each member qualitative feedback to help them understand your judgement of their performance. It is important that you raise the evaluation of people who worked hard for the good of the team and lower the evaluation of those you perceived not to be working as hard. Those who contributed should receive the full worth of the final project grade; those who did not contribute fully should only receive partial credit.

More instructions will be communicated via Canvas closer to the date.