THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

BUSINESS SCHOOL

Course Outline 2017
INFOSYS 730: TELECOMMUNICATIONS MANAGEMENT (15 POINTS)
Semester 2 (1175)

Course Description

Seeks to expose students to current issues in telecommunications and computer networking as the involved industries move towards network and service convergence. Uses a multidisciplinary approach consisting of communications technology evolution, network economics principles and legal and regulatory frameworks. Cases include: Ethernet and the battle for the local area standard, Carrier Ethernet as a wide area, technology, MPLS and VPLS, cellular and data wireless communications, next-generation networks VoIP, IPTV.

Programme and Course Advice

Relevant undergraduate degree or equivalent

Goals of the Course

- To understand the basic concepts underlying the key functions and technology involved in the modern delivery of telecommunications services.
- To understand the forces – technological developments, policy decisions, market factors – the drive the convergence of networks and services.
- To learn about and get acquainted with emerging communications technologies.
- To enable students to understand the implications of technical and economic decisions on the ability that a network operator has for providing communication services.
- To enable students to understand the main public policy and regulatory issues surrounding the industry.
- To learn about the way the telecommunications market landscape is changing in New Zealand with the introduction of Fibre-to-the-home technology.

Learning Outcomes

By the end of this course it is expected that the student will be able to:

1. understand the main telecommunications technologies available to organisations;
2. understand the main issues associated with internetworking, transport protocols, Wide Area Networks and the range of enhancements to Internet protocols;
3. discuss a number of different wireless communications technologies;
4. understand basic economic principles underlying network value, network growth, network effects and service pricing;
5. understand technological issues and drivers of value creation for services to be provided over open access platforms, and,
6. present in written a critical summary of how a given telecommunications technology evolves to impact markets, organizations or society in the New Zealand context.

Content Outline

Week 1 July 24	**730 explained!** Objectives Content structure { Technology; Economics; Policy } Assessment and rules Group project	**Circuits vs. Packets** What is circuit-switching: the telephone network Data networks: Packet-switching – IP Internet layer model: understanding data networks TCP-IP is what makes Internet what it is	
Week 2 July 31	**Who won the Local Area Network battle?** (Ethernet) ALOHA protocol - What is Ethernet? - Randomizing access to the Local Area Network: CSMA/CD - Evolution of Ethernet		
Week 3 Aug 7	**TCP/IP** Addressing system and its evolution – Routing in an internetwork Achieving reliability and congestion control		
Week 4 Aug 14	**Look ma: No wires!** (Wireless networks) Cellular networks: evolution from analogue to 4G Wireless data networks: Wi-Fi - Current trends in wireless technology Guest Lecturer:		
Week 5 Aug 21	**You said: "Network Economics"** Value of a network: laws of value growth Introduction to pricing: demand function, price elasticity, consumer surplus Demand and network effects.		
Week 6 Aug 28	**Network Economics** (cont.) Pricing techniques: linear, 2-part tariff, multi tariffs. Demand under competition. Market structure (monopoly, oligopoly). **Regulate this** Market failures. Network externalities. Why are industries regulated? Technical justifications for regulating Theories of regulation Guest Lecturer:		
Week 7 Sept 18	Midterm test		**NZ's Telecomm Industry Series** Fernando Beltran
Week 8 Sept 25	**Spectrum management is serious business** Defining the spectrum – Short history of spectrum management - Spectrum allocation and spectrum assignment – Lotteries and auctions – Auctions evolving		**NZ's Telecomm Industry Series** Crown Fibre Holdings
Week 9 Oct 2	**Bro: where is my Internet?** Network interconnection: who pays for a call? What is network convergence? Moving to a single network? What is the future of the telephone network? Where is Internet heading to? The future of Internet		**NZ's Telecomm Industry Series** Pat Duignan Munro Duignan Limited
Week 10 Oct 9	**Week 9: Quo vadis: where is the telecommunications industry heading to?** What is network neutrality? - Open access - The broadband ecosystem (Case: NZ UFB) - The wireless explosion: spectrum management in a new spectrum use era		**NZ's Telecomm Industry Series** **TBA**
Week 11 Oct 16	**Your turn**	**Group presentations**	**Group presentations**
Week 12 Oct 23	**Your turn**	**Group presentations**	

Learning and Teaching

The course is delivered within the following components:

Lectures:	1 x 3-hour lecture per week
Readings:	Students are expected to read a number of journal articles and other selected readings before attending the lecture.
Mid Term test:	Written test
Assignments:	4 assignments
Final Project:	Team assignment in three parts:
	Proposal
	Presentation
	Essay

Teaching Staff

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Office Hours: Mon 12:00 – 1:00 pm
Wed 11:00 am – 12:00 pm

Lectures: Mon 9:00 – 12:00 noon

Learning Resources

Readings: papers and other material will be posted on Canvas

Assessment

Type	Weighting	Learning Outcomes addressed
Mid Semester Test	20%	1 - 3
Assignments	40%	1 - 4
Final Project		
Presentation	5 %	5 – 6
Proposal and Final report	35%	5 – 6

Final Project

I . General instructions

Research paper is a team-based assignment on a topic to be chosen by each team amongst the list of topics shown below. By writing the paper students will demonstrate their abilities to:

- Understand the issues and challenges that concern a particular aspect of New Zealand´s UltraFast Broadband initiative.
- Locate bibliographical sources and use them to research the chosen topic thoroughly.
- Contribute a comprehensive analysis and write formally.

Previous to your final submission your group will present the main issues surrounding your topics and outline the contents to be considered. This will be done in a group session over the last two lectures of the semester called “Group Presentations”. In your presentation you will demonstrate your abilities to:

- Communicate the main questions and issues about the topic of your choice

- Clearly describe its background information and the current situation
- Outline the structure of your paper
- Listen to the questions and comments from the audience
- Make sure the comments from any discussion that arises are used to improve your paper

The presentation is not necessarily a final presentation of findings or research. It is a way for the group to communicate their work plan and invite their classmates' views, questions and opinions.

II. Requirements

Lecturer will offer a range of topics for research (see IV. below). Select three topics and rank them as **most** preferred to **second** most preferred and **third** most preferred. Send this info to f.beltran@auckland.ac.nz . Topics will be assigned on a "first-come/first-served" basis. If two or more groups choose the same most preferred topic the group with the earliest received e-mail message will get it. Your choice topic MUST be approved by the lecturer before you can start working on it.

The FINAL PROJECT comprises a PROPOSAL, a PRESENTATION and an ESSAY.

The project will start with submission of a PROPOSAL. This is a document that describes the approach taken by the group and outlines the contents to be discussed. PROPOSAL will be 600 words max and 4 pages (if needed for graphics or charts). PROPOSAL must show a bibliographical reference list (not included in the 600 word limit). NO COVER PAGE, please.

PROPOSALS must be submitted via Canvas **before 5 p.m. on Wednesday October 11.**

On any of the **last two lectures** groups will present their findings to the rest of the class. This is the activity known as PRESENTATION. Presentations schedule is the following (for the list of topics see IV. below):

Topics 1 through 4: **Monday October 16**
Topics 5 through 8: **Monday October 23**

Your group will be allowed 30 minutes for your PRESENTATION, including lectern or projector setup and questions and discussion. Your group is responsible for managing this time slot. You may use up the full time slot or a part of it.

Your group is free to choose the format for your presentation, in particular, who leads the presentation, when and for how long each team member talks, etc. Bear in mind that each group member´s contribution to the presentation will count towards this component of the marks.

ESSAY is the third of the activities in the final project. This is a paper where the group must demonstrate their ability to synthesize information, discuss and analyse the chosen topic. Though not a research paper, writing it must follow the same guideline as a research paper. Groups are advised to conceive the ESSAY as research exercise.

The ESSAY, if properly planned and executed, will add to the value of the course by increasing the depth of your knowledge in one or more subject areas. As you begin your research, the reference textbooks can provide you with a useful introduction to your topic. When researching your topic, you are expected to go beyond course readings and lectures.

ESSAYS will be graded based on (1) the description of the issue(s) (statement of purpose, factual accuracy, whether your description is up to date); (2) your analysis of the issue(s); (3) the quality of your research (whether you find good sources, whether your sources are current and diverse); and (4) writing mechanics (correct spelling and grammar, clarity and style, citation form, and organisation).

Your ESSAY must be between 3,000 to 4,000 words and use 11 point font size; DO NOT use a cover page; do not use logos or marks or drawings on the paper header; just write the NAMES and UPIs of the team members.

The paper will be checked using the ***turnitin.com*** service. Details regarding this procedure will be explained in class.

ESSAYS must be submitted via Canvas **before 5 p.m. on Monday October 30**. Late papers will be penalised 20% per day (24 hours). For example, a paper submitted in AFTER 5pm on Oct 31 and BEFORE 5 pm on Nov 1 will be worth 80% of a paper submitted on time. And so on.

Only Canvas submissions will be accepted.

III. Marking Criteria

Papers will be graded based on
(1) the description of the issue(s) (statement of purpose, factual accuracy, whether your description is up to date);
(2) your analysis (critical analysis) of the issue(s);
(3) the quality of your research (whether you find good sources, whether your sources are current and diverse); and
(4) writing mechanics (correct spelling and grammar, clarity and style, citation form, and organisation).

IV. Topics

The list of topics follows.

LIST OF TOPICS WILL BE RELEASED ON DUE TIME.

V. Topic selection process and presentation schedule.

Topic selection process:

Every team **MUST** be three (3) students.
Once your team members are identified a team representative must:

1. E-mail f.beltran@auckland.ac.nz the names and UPIs of the **three** team members.
2. Include 3 topics from the list, clearly indicating what your FIRST preference, your SECOND preference and your THIRD preference.

E-mails that either do not mention the three names clearly or do not list at least two topics will not be considered.

Allocation of topics will be on a First-Come, First-Served basis. Indicating at least two topics will help solve any preference overlap.