MINOR IN INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

(Ceased to be offered as a Minor with effect from AY2015/16 onwards)

INTRODUCTION

Information and Communication Technologies (ICT) is a broad course concerned with information and communication technology and other aspects of managing and processing information. As modern technologies (computers, internet, wireless communication, etc) have continued to transform the knowledge-based economy at global level, almost all professions (e.g., Engineers, Doctors, Scientists, Business Executives, Teachers, etc.) need an understanding of information communication technologies and their applications. In fact, Information and communication technologies are used in almost every aspect of our lives: The ICT industry is also one of the fastest growing segments of our economy and that growth promises to continue well into the next century.

The Minor in Information-Communication Technology (ICT) has been introduced by the School of Electrical & Electronic Engineering, in response to recent developments in the ICT industry. The courses in ICT minor program examine what is going on in the world around us today and explore the modern technological changes. The main objective of ICT minor program is to produce graduates who are technically savvy to meet the needs of the information age and it aims at fulfilling the educational requirements of an "information based society", which calls for a know-how in information and communication technology. This program also gives you a chance to explore, think about and use Information and communications technologies in new ways.

The ICT minor is particularly well suited to students majoring in business, accountancy, engineering, art media and design, sciences, and humanities. The program prepares students for current developments and evolving technologies in working environments outside the university setting.
The ICT Minor aims to provide non-Infocomm students with the essential knowledge in the e-business technology and competency skills (which are equivalent to Level 3 and 4 of the IDA's Infocomm Training Framework) to work in the infocomm sector. The ICT minor is open to all undergraduate students in all majors, except EEE students.

CAREER OPPORTUNITIES

ICT plays a vital role in everyday life and in many sectors including manufacturing, engineering, communication, education, banking, health, defense, media, design, automobile, aerospace, electronics etc. Therefore, graduates with ICT minor will have excellent opportunities locally and globally in various private and public organizations, banks and multinational companies. According to the U.S. Bureau of Labor Statistics, graduates with computer skills (ICT) are in demand. "Of the top 10 fastest growing occupations, the top five are computer related."

The Infocomm Development Authority (IDA) has identified 5 levels of ICT competency that are needed to enhance the e-lifestyle of the general public, the employability of the workforce, the competitiveness of e-businesses, and the conversion of non-infocomm professionals to become ICT professionals. To meet the manpower training needs of the ICT industry, IDA has introduced key programmes as listed in Table 1.

TABLE 1: KEY PROGRAMMES FOR NON-INFOCOMM PROFESSIONALS

INFOCOMM TRAINING:	
Programme	DESCRIPTION
Infocomm Training Framework (ITF)	The Infocomm Training Framework provides focus on the training needs of the different population segments in Singapore (i.e. public, private and people sectors). It is comprised of five levels (Level 1 – Level 5) of infocomm training programmes to meet the specific needs for infocomm skills.
National It Literacy Programme (NITLP)	This Level 1 program aims to equip workers with basic computing and internet skills to improve their quality of life and enhance the worker's employability.
Infocomm Competency Programme (ICP)	This Level 2 programme aims to equip the individual and the general workforce with new infocomm skills and knowledge to prepare them for the fast-pace digital economy.
E-Business Savviness Programme (EBSP)	This Level 3 program aims to train a pool of skilled manpower with e-business skills and knowledge to support the e-business industry.
Manpower Conversion Programmes	This Level 4 programme aims to provide the incentives to increase the pool of infocomm manpower by converting the non-infocomm professionals to become infocomm professionals in strategic sectors: • Strategic Manpower Conversion Programme in Infocomm [SMCP (Infocomm)] • Strategic Manpower Conversion Programme in e-Learning [SMCP (e-Learning)]

With ICT minor, you will find yourself comfortable in a variety of environments in academia, research, industry, government, private and business organizations -- analyzing problems for solutions, formulating and testing, using advanced communications or multi-media equipment, or working in teams for product development.

CURRICULUM

The minor comprises 6 courses. It is structured into three series of courses of 3 AUs each.

1. IC9101 Internet Fundamentals (Sem 1)
2. IC9206 Wireless Networks (Sem 2)
3. EE8061 Innovation & Technology Management (Sem 1)
4. EE8084 Cyber Security (Sem 1 & 2)
5. EE8092 Digital Lifestyle (Sem 2)
6. FE1008 Computing (For non-engineering students only) (Sem 1 & 2)

The IC91 series comprises of courses aimed at providing students with the basic background in e-commerce applications, systems, and technologies. The courses in the IC92 series provide students with deeper appreciation of the technologies pertaining to software engineering and supporting systems and networks in ICT. Students generally take the courses in the IC91 series before progressing to take the IC92 courses, Students may select any 5 of the 6 courses to accumulate 15 AUs and qualify for the award of the Minor in Information-Communication Technology. The descriptions are posted at http://www.eee.ntu.edu.sg/Programmes/CurrentStudents/undergraduate/undergraduatefull-time/Documents/GER_Courses.pdf.

Important Note: A maximum of ONE (1) GER CORE or GER Prescribed Elective is allowed to be counted towards the minor requirement (provided the GER CORE or GER Prescribed Elective is also in the Minor's list of courses). This applies to students admitted in AY2013 onwards.

FREQUENTLY-ASKED QUESTIONS

1. Why should I take a Minor in ICT?

   In today's working environment, ICT is used extensive to enhance one's productivity and employability. A good understanding of ICT technologies will enhance your ability to utilize this technology in your future work and increase your job opportunities to work in many growth industries. This Minor aims to achieve the equivalent competency Level 3 and 4 defined in the IDA's training framework for non-infocomm professionals.

2. Who should take this Minor?

   As IDA has clearly identified that ICT skills are essential in today's business environment, we encourage all students who do not have such skills to take a minor in ICT to prepare them for the working world. The Minor will provide non-infocomm students the necessary background in ICT technology to appreciate the application and system issues involved in e-businesses and work productivity.

3. Who can take a Minor in ICT?

   This is open to all students in NTU except students in the Schools of EEE and CE and Business students specializing in IT. Students in the School of EEE do not need to offer the Minor in ICT because they are able to take similar courses offered by the School in the various ICT related electives.

4. Can I take the more advanced courses in the IC92 series first?

   It is recommended that students first take the basic courses in the IC01 series before proceeding to those in IC02 series. In this way, students will acquire the basic knowledge before proceeding to the more advanced courses and be better able to appreciate ICT technology.

5. Do I need clearance from my school before I can take a Minor in ICT?

   It is left to the School hosting the students' Major to decide whether such an option is appropriate. The School of EEE will not bar any student, except those in EEE and IEM, who are interested from offering this minor programme.

6. Can I take any of the courses in the Minor as General Electives?

   Yes, you may take any course from this Minor to satisfy your General Elective requirements.

7. What are the benefits for taking the Minor in ICT programme?

   ICT has become an indispensable and empowering technology for business, engineering, science and daily life. Frequently, engineers and professionals in other areas also work on problems that involve ICT either directly or indirectly. The worldwide demand of ICT professionals is always strong despite the recent temporary downturn. Students who take Minor in ICT programme will have the added advantage of having an additional ICT skill in comparison with their peers when they seek jobs in the industry. The additional ICT skill may also provide them with an alternative career path.

8. Are there any requirements on computer programming for the Minor in ICT programme?

   Some basic knowledge on computer programming is useful. However, none of the courses requires students to do intensive computer programming. Students who are interested in computer programming can take some additional courses that provide more intensive computer programming offered in the School of EEE.

9. I am just starting year 3; can I take this program?

   It is advisable to take ICT minor earlier, as you will have only 3 semesters to complete all the five courses, and some courses may not be offered in all semesters.

10. I am interested in this program but still have some doubts. Can I talk to someone to clarify my doubts and obtain more information?

    Yes, you may contact Assoc Prof Peter Chong at EHJChong@ntu.edu.sg.

11. If I cannot complete the Minor requirements can the courses I have already completed be credited as my electives?

    The courses can only be credited as GER unrestricted electives (UE).