❒ Mandatory General Courses and Requirements

1. Mandatory General Courses

A. General Course Requirements

1) Mandatory general courses are common courses required for graduation and designated by each department (major). Students in the graduate course should complete at least one course or more (3 or more credits) from the mandatory general courses chosen by each department and major.
   ※ The mandatory general courses may be different depending on the department.
   ※ If students complete the mandatory general course in the master's program, they do not need to complete the same requirements in the PhD course.
2) Ethics and Safety I(1AU) should be taken for graduation. Take one time between master's program and doctoral programs. (applicable to all graduate students presently studying at KAIST starting in March, 2009.)
3) The master's course requires the completion of the non-credit leadership lecture.

B. Opening and operation of leadership lecture for master's course

◦ This leadership lecture is offered to students in the master's program, and has been offered from 2002 with the purpose of encouraging students to comfortably take on leadership roles after graduation.
◦ Lecturers: CEOs from industry and other well known persons.
◦ Subject number and lecture: Lab: credit : CC010(1: 0: 0).
◦ Subject classification: mandatory general course (Students can graduate only after completion of this requirement).
◦ Target students: master's course students (This applies to new students beginning in or after 2002; general scholarship students, foreign students, and new students at College of Business are excluded).
◦ Graduation requirement and grade: The requirement of graduation is considered fulfilled if students attended these non-credit lectures a total of at least 5 times (from the autumn semester of 2003 the requirement changed from: 4 times, to: 5 times or more), and receive the “S" grade. If the “U" grade is given his requirement is not fulfilled.

C. Course of Ethics and Safety

◦ This course is for graduate students which includes Research Ethics, Lab Safety, and Leadership. It is especially to educate prevention of research misconducts and safety regulations since academic circles at home and abroad has recently paid greater attention to research ethics and safety.
◦ Course Number & Course Name: CC020(Core Course), Ethics and Safety I
◦ Target students: All of the students presently studying at KAIST should complete the course for graduation. Also, it is recommended to take the course in their first semester. (take one time between master's program and doctoral programs).
◦ Students do not have to register for the course but go to the web-site(http://eethics.kaist.ac.kr), complete the course.
◦ Exam period: From the beginning of each semester through the final exam period (One may take exams by up to ten times per each sub-course during the period)
◦ Examination : Take the test online and should get the grade "S" by scoring 80 or higher points out of 100 in all of the 3 subjects (Research Ethics, Lab Safety and Leadership).
◦ Exam-taking process

Visit the website http://eethics.kaist.ac.kr	→	Log on using your portal ID	→	Take individual sub-courses	→	Take tests after completing the sub-courses	→	Find out the test results

◦ Required Courses by Department (those marked with 'x' are not mandatory)

College	Department	Research Ethics	Lab Safety	Leadership
Natural Science	Physics	0	0	0
	Mathematical Sciences	0	X	0
	Chemistry	0	0	0
	Graduate School of Nanoscience & Technology	0	0	0
Life Science & Bioengineering	Biological Sciences	0	0	0
	Bio and Brain Engineering	0	0	0
	Graduate School of Medical Sciences & Engineering	0	0	0
Engineering	Mechanical Engineering	0	0	0
	Aerospace Engineering	0	0	0
	Ocean Systems Engineering	0	0	0
	Civil and Environmental Engineering	0	0	0
	Chemical and Biomolecular Engineering	0	0	0
	Materials Science & Engineering	0	0	0
	Nuclear and Quantum Engineering	0	0	0
	Graduate School of EEWS	0	0	0
	The Cho Chun Shik Graduate School for Green Transportation	0	0	0
	Satrec Initiative-KAIST Space Technology Program	0	0	0
School of Innovation	Management Science	0	X	0
	Master of Business Administration Program	0	X	0
	Graduate School of Innovation & Technology Management	0	X	0
	Master of Science Journalism	0	X	0
	Global Information & Telecommunication Technology Program	0	X	0
	Master of Intellectual Property	0	X	0
Cultural Science	Graduate School of Culture Technology	0	X	0
	Graduate School of Science and Technology Policy	0	X	0
Information Science & Technology	Electrical Engineering	0	0	0
	Computer Science	0	X	0
	Information and Communications Engineering	0	X	0
	Industrial & System Engineering	0	X	0
	Knowledge Service Engineering	0	X	0
	Industrial Design	0	X	0
	Web Science Technology Program	0	X	0
	Graduate School of Information Security	0	X	0
	Digital Media Program	0	X	0
	Software Graduate Program	0	X	0
	Software Engineering Program	0	X	0
Business	Management Engineering	0	X	0
	Techno-MBA	0	X	0
	Executive-MBA*	X	X	X
	IMBA	0	X	0
	Finance-MBA*	X	X	X
	Information & Media MBA	0	X	0
Interdisciplinary Program		0	X	0

* Executive-MBA and Finance MBA should take the designated substitute courses which are offered by each department.

D. Course of Scientific Writing

◦ This purpose of this course is to teach students the English writing for their professional lives as

scientists and engineers. The requirements of this course are different depending on the department.

◦ Course number and Course name: CC500 Scientific Writing (mandatory general course).

* The course name changed from "Science Writing in English" to "Scientific Writing" starting in Spring 2009.

◦ Credit and grade: Lecture: Lab: Credit (3:0:3), a grade of S/U is given only.

◦ This course is managed by the Department of Humanities and Social Sciences.

◦ The departments below have deemed this course mandatory; therefore, this course is classified as a mandatory general course

◦ Foreign students are allowed to take HSS586 (Introductory Korean for Foreigners I) instead; students from non-English-speaking countries are recommended to complete CC500 and HSS586.

E. Course of Entrepreneurship and Business Strategy

◦ This course was opened in 2002 and has been offered for graduate students to help the students develop and heighten a "venture" mind, and enhance their entrepreneurial and leadership skills for starting up their own global venture company filled with growth and success.

◦ Course classification and credit: mandatory general course (CC530), 3:0:3(3).

- If a department has deemed this course mandatory, this course is classified as a mandatory general course.
- If the department has not designated this course as mandatory, this course is recognized as an elective course.

◦ This course is applicable to students enrolled in graduate course in the year 2002 or after.

F. Course of Patent Analysis and Invention Disclosure

◦ This Course aimed at providing students in the master's/doctoral program with opportunities for theory and practice related to the investigation, analysis, and use of patent information necessary for scientists and engineers will be offered from spring 2007.

◦ Course classification and credit: mandatory general course (CC531), 3:0:3(6).

- If a department has deemed this course mandatory, this course is classified as a mandatory general course.
- If the department has not designated this course as mandatory, this course is recognized as an elective course.

G. Course of Collaborative System Design and Engineering

◦ This Course aimed at providing students in the master's/doctoral program with opportunities for systematic design-thinking, offering from spring 2009 as a mandatory course of Renaissance Program.

◦ Course classification and credit: mandatory general course (CC532), 4:0:4.

- If a department has deemed this course mandatory, this course is classified as a mandatory general course.
- If the department has not designated this course as mandatory, this course is recognized as an elective course.

* Mechanical Eng., deemed this course mandatory only to the students in Renaissance Program.

◦ All students in Renaissance Program should take this course.

2. Required Common Courses Lists

Classification	Course No.	Subject Name	Lec:Lab.:Credit (Homework)	Department
Mandatory General Courses	CC010	Special Lecture on Leadership	1:0:0	Leadership Center
	CC020	Ethics and Safety I	1AU	Academic Support Team
	CC500	Scientific Writing	3:0:3(4)	Humanities & Social Sciences
	CC510	Introduction to Computer Application	2:3:3(10)	Computer Science
	CC511	Probability and Statistics	2:3:3(6)	Mathematical Sciences
	CC512	Introduction to Materials Science and Engineering	3:0:3(3)	Material Science & Eng.
	CC513	Engineering Economy and Cost Analysis	3:0:3(6)	Industrial & Systems Eng.
	CC522	Introduction to Instruments	2:3:3(8)	Electrical Eng.
	CC530	Entrepreneurship and Business Strategies	3:0:3(6)	Graduate School of Innovation & Technology Management
	CC531	Patent Analysis and Invention Disclosure	3:0:3(6)	Bio and Brain Eng.
	CC532	**C**ollaborative System Design and Engineering	4:0:4	Mechanical Eng.

3. Descriptions of Mandatory Courses

CC010 Special Lecture on Leadership **1:0:0**

This leadership lecture is given by invited CEOs of businesses and well-known people in the community to develop the students' leadership so that they can have the capacity for leadership after graduation, and serve as leaders in science and technology.

CC202 Ethics and Safety I **1AU**

It is more highlighted than ever to educate prevention of research misconducts and safety regulations since academic circles at home and abroad has recently paid greater attention to research ethics and safety. This course broadly introduces and encompasses research ethics, safety management and leadership to educate students to be an excellent leader in the future.

CC500 Scientific Writing **3:0:3(4)**

This is the course to discuss English presentation required for the professional activities of scientist or engineer. Topics include writing manuscript for international academic publication, presentation at an international academic conference, major seminar presentation, writing English research plan, preparation of a thesis or report and presentation skills.

CC510 Introduction to Computer Application **2:3:3(10)**

This course is designed to introduce the concept of programming and advanced programming languages such as FORTRAN, PASCAL and others, and to teach the basic knowledge of computer hardware and software. Through the conversation-type terminal practice, the method of file manipulation, text editor and others, students make their own programs to solve the problems in several fields to acquire the basis of using computers.

CC511 Probability and Statistics **2:3:3:(6)**

This course is a basic course for science and engineering and discusses the probability and statistical bases required in research. Topics include experimental data analysis and processing, parameter estimation, hypothesis verification, regression analysis and others.

CC512 Introduction to Materials and Engineering 3:0:3(3)

This course introduces industrial materials, principles of mechanical, chemical, electric and electronic properties of metals, polymer materials with its equity, status, dispersion and phase change theories, relationship of organization and property, practical use of several materials and the status of material engineering in Korea.

CC513 Engineering Economy and Cost Analysis 3:0:3(6)

In this course about the industrial system, overall economic issues are addressed based on theories and techniques developed for analysis and evaluation, and this course handles the basic knowledge of economics, characteristics of industrial economic issues, time value of fund, current value and annual equivalent value analysis, depreciation, economics of public projects, facility replacement and others.

CC522 Introduction to Instruments 2:3:3(8)

In this course, the basic experimental technique required for electric and electronic engineering is implemented. The topics include the experiment using the passive elements such as R,L,C. and the motion principle of the oscilloscope. Building on this experiment, basic analog experiment (an AC/DC power device, amplitude of a transistor, and an operation amplifier), a digital experiment (combinational sequential logic) and motion principle of the computer are taught in addition to a few application experiments (dimmer, motor position control and others).

CC530 Entrepreneurship and Business Strategies 3:0:3(6)

Centering on the start up and management of global market oriented venture companies, entrepreneurship and management strategies are discussed and business case studies are introduced.

CC531 Patent Analysis and Invention Disclosure 3:0:3(6)

This course deals with tools and methods for patent analysis and invention disclosure. Topics include patent classification, intellectual properties and protection, patent database and search engines, analysis tools and methodology, quantitative and qualitative analysis, invention disclosure and patent application, and patent portfolio strategy.

CC532 Collaborative System Design and Engineering 4:0:4

The course aims to integrate Systems engineering and Design theory so as to be executable in knowledge creation cycles with the aid of collaborative creativity in teamwork based on systems thinking. In order to achieve this goal, the course will deal with three major areas: 1) Fundamentals of Systems Engineering, 2) Collaborative Creativity and Knowledge Creation, and 3) Design Principles and Design Methods.