Table A0: Presentation – pag 1/5

PONTIFICIA UNIVERSIDAD CATOLICA DE VALPARAISO
CHEMICAL ENGINEERING DEGREE PROGRAM
ACADEMIC YEAR 2007
FACULTY OF ENGINEERING

First academic year held: 1928
Nominal duration: 6 years
Main offering departments:
SCHOOL OF CHEMICAL ENGINEERING

For further information concerning the degree program or to contact secretarial services, see the following websites and e-mail addresses:
- www. pucv.cl website
- www.eiq.cl website
- direiq@ucv.cl

Table A0: Presentation – pag 2/5

Historical Background

The Pontificia Universidad Católica de Valparaíso is committed to the culturing, in the light of the faith, of the sciences, the arts and the technologies, by the creation and communication of the knowledge and Catholic values to form integral graduates and professional with vocation of service to the society.

On its exercise of the Mission, the University guarantees academic freedom to its members and protects the equality of opportunities in the access to higher education for the students.
On September 21, 1925, the first stone was put on what today is recognised as one of the major and prestigious of the top Chilean higher education Institutions. Three years later, in March 1928, The Pontificia Universidad Católica de Valparaíso began its activieties.

The beginnings of our University were possible thanks to the generosity of lady Isabel Caces de Brown, and her daughters , ladies Isabel Brown de Brunet and Maria Teresa Brown de Ariztía, who headed the efforts to offer the community a higher education opportunity , a project that was of great transcendence in the history of Valparaiso.
Today the Pontificia Universidad Católica de Valparaíso is the largest University in Valparaíso and the fourth largest in the country, with over 14,000 students enrolled in 62 educational programmes offered in 8 campuses located both in Valparaíso and Viña del Mar.

In the year 1928 the University began with six programs, among which includes industrial chemistry, which would be transformed in 1937 into the current program of chemical engineering, including within the Faculty of Engineering and under the administration of the school of chemical engineering. Current school offers undergraduate programs in civil chemical engineering and civil engineering in extractive metallurgy, with an enrollment of 230 students in chemical engineering and 100 students in extractive metallurgy, plus a master programme in engineering sciences, with mention in chemical engineering.

Table A0: Presentation – pag 3/5

Presentation of the Programme

School of Chemical Engineering offers 2 academic programs, civil chemical engineering and civil engineering in extractive metallurgy both of 6 years' duration, with a total enrollment of 317 students and an average annual income of 78 students.
In Chile there are two different types on Engineering programmes which are divided into Technological fundaments, lasting four or five years and those of Scientific fundaments (Chemical Civil Engineers) lasting six years. The latter, provide students with the Bachelors Degree and the Professional title which enable them to reach the top hierarchy in the engineering professional context and, consequently, obtain the best economic compensations for their jobs. Furthermore, the six year Engineer is able to continue studies to get Masters and PhD graduate degrees.
The Chemical Engineer from the Pontificia Universidad Católica de Valparaíso (PUCV), is a person with ample knowledge of mathematics, chemistry, physics, engineering science, principles and methods of analysis and engineering design. The knowledge has been adquired through education and experience. The Chemical Engineer from PUCV is qualified to identify and solve problems of engineering in process industries, involving mass and energy transformations.
In addition, his capacity of auto learning, sustained in a solid trainning, allows him to work in a broad type of companies related to his discipline.
The Chemical Engineer is able to perform wide and diverse works; he develops, designs, administrates (plans, organizes, controls, manages) different industrial processes. He performs research and he studies technical and economical alternatives for processes and equipments. He is able to asign and manage human resources in charge and assume executive responsabilities.
The Chemical Engineer will develope all the activities with special attention in safety and welfare for his personnel in charge, as well as, the conservation and protection of environment and equipment of the process.
His professional work must be framed by ethical principles of the institution and his profession.
The development of the mining industry in our country and the program in metallurgy engineering of our school, allow our graduates being enabled to perform in the field of mineral processing, based on the several optional courses and research development in this area.
The programme was accredited for three years and is currently under accreditation process by National Accreditation Commission, CNA. http://www.cnachile.cl/acreditacion/resultados.html

Program	Duration (semesters)	Income	Nº Students 2008	Nº Graduates
Civil Chemical Engineering	12	50	209	18
Civil Engineering in Extractive Metallurgy	12	28	98	2

Table A0: Presentation – pag 4/5

The ***stakeholders*** who provide professional outlets for programme graduates chiefly consist of the main industries in the Valparaiso Region, and representatives of the alumni of the of School of Chemical Engineering.
The university's representatives who interact with these stakeholders or who apply input from these interactions to educational programs are detailed in Table A1: Interactions with external stakeholders together with the documentary evidence for their past and current work.

The ***Competencies*** that programme graduates will need to fill their professional roles and the functions exercised in those roles are summarized in Table A2. External requirements.
The function of the Chemical Engineer is able to carry out is very ample and diverse; develops, designs, administers (plans, organizes, controls, optimizes) the different industrial processes. It realises activities of Investigation and it studies alternatives of processes and equipment that is technical and economically feasible. The chemical engineering graduate can be employed in any company that involve mass and energy transformation. For example: Chemical, Metallurgical, Food, Petrochemical industries.

Course content thus ensures in the chemical engineering graduate a solid mathematical, chemical and physical grounding knowledge, together with the knowledge engineering sciences can provide the skills and understanding for engineering design and management. The structure contents is the detailed in:

Table A3 – Intended learning outcomes and associated course work
The educational program considers a total of 12 semesters where the 4 first contain the courses of basic sciences, the 4 intervals mainly contain courses of engineering sciences leaving to last the 4 with knowledge of administration, engineering and projects.
Table B2 – Curricular content

For admission to a degree programme at the Pontifical Catholic University of Valparaiso, prospective students must take the National University selection Examination (PSU) plus a specific test of mathematics and science knowledge.
Other way is the especial system of admission, design for students who have especial conditions as prominent sportsman, foreign, professional whit academic degree, comes for another university program, and others.
(Table B1a. Entry qualifications) shows the admission system for the program and Table B1b – Entry qualifications (for orientation) lists the topics with which the student must be familiar in order to pass entrance examinations.

Class schedules established by the Chemical Engineering are posted on the Chemical Engineering intranet system. Courses are organized for semester and seven session per day Monday through Friday. Table B3 – Contact hours

Table A0: Presentation – pag 5/5

The activities of the chemical engineering program are realised in the dependencies of the engineering faculty, Av. Brasil 2241, Valparaiso as much in classrooms, laboratories, libraries and spaces of study.
Table C1: Material resources and equipment

The program head realises every semester and every year the statistical analysis of the academic behavior of the students with respect to admission, advance and graduation. Furthermore have a on suitable computer tools for the control and monitoring of the academic advance.
Table D1 – Student enrollment and progression data. Resume the statistical information of the academic behavior.
Table D3 – Degree program analysis, monitoring and review provides an overview of the procedures used to analyze, monitor and review the degree program, and indicates responsibilities for these activities, the timelines involved, reference documents and details of document availability.

The student have the opportunity to take exchange program with different institutions in America, Europe and Asia. And have the opportunity carry out practical training and final projects in companies and institutions, and often leads to first employment.
This information is resume in: Table D2 – Further information

Table A1: Interactions with external stakeholders- Pag 1/1

Academic body or person representing the institution	External stakeholders	Type, mode and timeline for interaction	Documents on record
Consejo Asesor Empresarial (Council between Engineering Faculty and Industrial stakeholders)	Representative of the main industries in the Valparaiso Region	Annual reunion, to review the status of engineering in the country and the region and contextualize the training provided by our faculty.	Presentation document and minutes of the meeting.1, 2.
Director de Escuela de Ingenieria (Director of School of Chemical Engineering)	Representatives of the alumni of the of School of Chemical Engineering	Monthly meetings to review the current status of chemical engineering in pepper, finishing with a record. Annual reunion for alumni ties	Chemical engineering development reports and alumni magazine. Minutes 1, 2, 3, Pictures.
Dirección de desarrollo curricular y formativo PUCV (Curriculum development and training department PUCV)	National Accreditation Commission.	Monitor and promote the quality of universities, professional institutes and technical training centers autonomous and careers and programs they offer.	Accreditation Summary.
Dean of the Faculty of Engineering	Colegio de Ingenieros de Chile (Chilean Engineering Association)	To take into account the requirements this body demands to their members registration in terms of curriculum content.	Minutes of monthly meetings and Web site

Table A2: External Requirements – Pag 1/3

The work that the Chemical Engineer is able to carry out is diverse; develops, designs, administers (it plans, organizes, controls, optimizes) the different industrial processes that involves mass and energy transformation. It realises activities of Investigation and it studies alternatives of processes and equipment that is technical and economically feasible. Account with the facility to assign and to administer the human resources to its position and to assume executive responsibilities in the administration and management of them.
The Chemical Engineer must develop all these activities taken care of security and well-being conditions of the personnel to his position, as well as, the conservation and protection of the environment and the equipment involved in the processes. Its professional work must be framed by a honesty and responsibility, putting in practice the own ethical principles of the Institution and its profession.

Main *reference* professional roles or further study for which the graduate will be prepared	Competencies required to fill role / functions exercised in role
Physics-Chemistry Process Design Engineer	The graduate will be competent to develop, design and assess technically and economically industrial processes involving mass and energy transformation. <u>Functions:</u> • Physics-Chemistry process developer. • Physics-Chemistry processes architect • Physics-Chemistry process researcher (basic level) • Processes evaluator (technically and economically) <u>Competences.</u> • Solves chemical engineering problems applying knowledge of mathematics, chemistry, physics, biology and engineering sciences. • Solves chemicals engineering problems applying knowledge of basic and engineering sciences, particularly mass and energy balances, mass, heat and momentum transfer, process analysis, chemical reaction kinetics, process control and unit operations. (intermediate level) • Uses communication and information technologies. • Design and conducts experiments in order to obtain relevant data to solve real engineering problems • Analyze and interpret information in solving engineering problems. • Design new systems, components and processes. • Models and simulates physical chemical process for their control and optimization. • Has written and oral skills. • Has the capacity of self learning to be up to date with latest developments in the field and to be able to forecast the tendencies of the chemical industry.

Table A2: External Requirements – Pag 2/3

Plant Engineer	Functions: • Solving practical problems of plant operation • Planning and managing the program operation • overseeing the maintenance and construction of plants • Selecting suppliers of equipment and machinery Competences: • Uses communication and information technologies. • Analyze and interpret information in solving engineering problems. • Asses the technical and economical feasibility of industrial processes • Has written and oral skills. • Has Basic English written and oral skills. • Works and interact with his/her pairs in multidisciplinary teams. • Leads and communicates effectively with his/her subordinates. • Understands his/her ethical and proffessional responsability, and he/she respects others points of view and beliefs in order to contribute to a suitable coexistence on the work place. •
Industrial Process Manager	The graduate will be able to plan, organize, control and to manage industrial processes involving mass and energy transformation. Functions: • Plant Administrator • Plant Production Manager • Plant Head Manager Competences: • Uses communication and information technologies. • Asses the technical and economical feasibility of industrial processes • Has written and oral skills. • Has Basic English written and oral skills. • Works and interact with his/her pairs in multidisciplinary teams. • Leads and communicates effectively with his/her subordinates. • Has the ability to adapt to each particular organization culture and to its structure and procedures. • Understands his/her ethical and professional responsibility, and he/she respects others points of view and beliefs in order to contribute to a suitable coexistence on the work place.

Table A2: External Requirements – Pag 3/3

Educational progression (to Master of Science Degree or PhD).	The Chemical engineer graduate: <u>Function:</u> • Undergraduate program teacher • Graduate student <u>Competences:</u> • Solves chemicals engineering problems applying knowledge of basic and engineering sciences, particularly mass and energy balances, mass, heat and momentum transfer, process analysis, chemical reaction kinetics, process control and unit operations. (intermediate level) • Design and conducts experiments in order to obtain relevant data to solve real engineering problems. (basic level) • Models and simulates physical chemical process. • Has the capacity of self learning to be up to date with latest developments in the field and to be able to forecast the tendencies of the chemical industry. • Has the capacity for take postgraduate studies towards Master of Science Degree or PhD Degree in any field of engineering science.

http://eiq.cl/Perfil_IQ.htm

Note: Professional roles and competencies shall be those established together with the external stakeholders listed in Table A1.
By competence we mean an integration of knowledge and skills, plus attitudes / transferable skills, in the context of a working activity

Table A3: Intended learning outcomes and associated course work – pag 1/8

For skills numbers and credits description see below

Subject areas	**Knowledge, understanding and skills expected of the student in order to demonstrate achievement**	**Course work and other educational activities** Curricular Program
Mathematics & Stadistics (Obligatory credits: 28 Optional credits:14)	**Knowledge:** Algebra, Mathematical logic, numerical bodies, Arrays. Geometry. Trigonometry. Polinomies. Functions. Numerical Series. Differential and Integral Calculus, Vectorial and Multivariable Calculus. Ordinary and Partial Differential Equations. Numerical Analysis. Probability, Distributions **Understanding:** Mathematical language, one and multivariable calculus, translate and resolve basics engineering problems, use mathematical and numerical tools. **Skills:** *1 ; 4 ;13 (see below)*	MAT-115 Differential Calculus, **6** MAT-116 Algebra, **6** MAT-117 Integral Calculus, **4** MAT-215 Multivariable Calculus, **5** MAT-216 Lineal Algebra and Differential Equations, (Optional), **4** MAT-217 Differential Equations, (Optional), **6** MAT-305 Advanced Calculus, (Optional) **4** EIQ-344 Experiments Design, **4** EIQ-140 Introduction to Engineering, **3**
Physic & Chemistry (Obligatory credits: 27 Optional credits:0)	**Knowledge:** Nomenclature. Solubility. Alkaline-Acid. Redox. Chemical Equilibrium, Volumetric and gravimetric Analysis. Chemical reaction kinetics. Gravitational and Electromagnetics Fields, electricity properties, electric current. Stationary and dinamic state of bodies. Work, Power and Energy, momentum. **Understanding:** Composition and behavior of matter, Basics Chemical and Physical laws, Basic quantitative and qualitative laboratory Analysis. The use of classical and modern analytical methods for resolve basics engineering problems. **Skills:** 1; 4 ; 13	FIS-131 Mechanical Physic 1, **4** FIS-231 Mechanical Physic 2, **4** FIS-331 Electromagnetic Physics, **4** QUI-220 Analytic Chemistry, **5** QUI-222 General Chemistry, **6** QUI-227 Organic Chemistry, **4**

Table A3: Intended learning outcomes and associated course work – pag 2/8

Subject areas	**Knowledge, understanding and skills expected of the student in order to demonstrate achievement**	**Course work and other educational activities** Curricular Program
Technical Drawing. (Obligatory credits: 5 Optional credits:0)	**Knowledge:** Basic concepts of technical drawing in engineering. Drawing's standars, first order views, auxiliary views, sectional views, blow up, isometric view, pipes isometric. CAD Tools for drawing (AUTOCAD). **Understanding:** Translate real objects to a plane and choose the optimal views. Reading engineering planes. **Skills:** 3; 5	EIQ-243 Engineering Drawing 1, **3** EIQ-253 Engineering Drawing 2, **2**
Informatic Tools. (Obligatory credits: 8 Optional credits:3)	**Knowledge:** Basic software for write, search and compute requirements for resolve engineering problems. High level program language, Numerical methods Programming. **Understanding:** Use basic and specific available computational programs to solve problems in the Chemical Engineering. Translate mathematical models to informatic platforrm in the way of resolve a problem. **Skills:** 3; 7	EIQ-150 Numerical Methods and Programming, **4** EIQ-542 Applied Programming, **4** EIQ-479 Modern Information Methods, (Optional) **3**
Physic-Chemistry (Obligatory credits: 11 Optional credits:2)	**Knowledge:** Ideal gas (pure compounds and mixtures). Liquid Mixtures. Pure compounds properties, Ideal mixtures, humidity, Physics equlibrium. Basic quantitative analysis for compounds properties and mixtures. **Understanding:** Basic behavior of pure compounds and ideal mixtures. Physics Transformation of matter. **Skills:** 2; 3 ; 4 ; 5 ; 9 ; 11	EIQ-140 Introduction to Engineering, **3** EIQ-242 Elemental Pysic-Chemistry, **4** EIQ-456 Pysic-Chemistry Laboratory, **4** EIQ-300 Material Balance, (Optional) **2**

Table A3: Intended learning outcomes and associated course work – pag 3/8

Subject areas	**Knowledge, understanding and skills expected of the student in order to demonstrate achievement**	**Course work and other educational activities** Curricular Program
Thermodynamic (Obligatory credits: 12 Optional credits:2)	**Knowledge:** Conservation of Mass and Energy. 1st and 2nd Law of Thermodynamics. Thermal properties of compounds. Thermal properties of reactions. Auxiliary thermodinamics functions, Real thermodinamics system, Partial Molars properties. General Phisical and Chemical Equilibrium, Stability. **Understanding:** Determine mass and energy transformation in semi-real industrial processes. Behavior of equilibrium system and thermodinamical relations between variables. **Skills:** 2 ; 3 ; 5 ; 6 ; 16	EIQ-342 General Thermodynamic, **4** EIQ-354 Chemical Thermodynamic, **4** EIQ-443 Processes Computing, **4** EIQ-360 Energy Balance, (Optional) **2**
Transport Phenomena (Obligatory credits: 14 Optional credits:7)	**Knowledge:** Fluids Properties. Stationary and not stationary state equations. Pumps principies, design and selection. Mechanisms of Heat and mass Transfer. Design and selection of heat transfer Equipment (tube and plate exchangers, coils and jacketed). Design and selection of mass transfer Equipment (extractor, difusser, destillator, stripper) Understanding: Application of basic concepts in fluids mechanics, heat and mass transfer to solve Engineering problems and equipment design. **Skills:** 2; 3 ; 5 ; 6 ; 7	EIQ-356 Fluid Mechanics, **4** EIQ-453 Heat Transfer, **4** EIQ-451 Material Transfer, **4** EIQ-655 Units Operations Laboratory, **2** EIQ-566 Distilling, (Optional) **4** EIQ-467 Solid Liquid separation, (Optional) **3**
Chemical Ractions & Reactors (Obligatory credits: 4 Optional credits:3)	**Knowledge:** Elementary kinetic reactions, homogeneous and heterogeneous. Catalysis. Homogeneous and heterogeneous reactors Design of true and ideals reactors. **Understanding:** Development of chemical reactions, methods for acelerate ractions, choose the optimal type of reactor. Basic design of reactor, **Skills:** 2 , 3 ; 5 ; 6 ; 7	EIQ-447 Kinetics and Reactors Design, **4** EIQ-503 Catalyst, (Optional) **3**

Table A3: Intended learning outcomes and associated course work – pag 4/8

Subject areas	**Knowledge, understanding and skills expected of the student in order to demonstrate achievement**	**Course work and other educational activities** Curricular Program
Electrochemistry (Obligatory credits: 8 Optional credits:0)	**Knowledge:** Electrochemical laws and variables. Electrochemical reactions. Electrodeposit methods of separation and Refining. Corrosion. Basic Analysis methods. Basic Laboratory Practices. **Understanding:** Electrochemical methods and its application for industrial processes. Corrosión problems and its treatment. **Skills:** 2 ; 3 ; 5 ; 6 ; 7 ; 9 , 10 ; 11	EIQ-544 Electrochemical processes, **4** EIQ-556 Electrochemical Laboratory, **4**
Process Simulation, Control and Instrumentation. (Obligatory credits: 9 Optional credits:0)	**Knowledge:** measuring instruments, signals, Elements for control loop. Control system for open and closed loop. Design and calibration of systems of measurement. Modeling and Simulation of Dynamic Processes. Basic theory of automatic control, stability and design of control loops **Understanding:** Chemical processes dinamic behavior. Acquire information from process variables. Model building and computer simulation. Formulate and implement control structures for processes. **Skills:** 3 ; 4 ; 5 ; 7 ; 9 ; 10 ; 11 ; 15	EIQ-442 Instrumentation, **4** EIQ-545 Instrumentation Laboratory, **1** EIQ-540 Process Control, **4**
Materials and Mechanical Design (Obligatory credits: 12 Optional credits:0)	**Knowledge:** Engineering materials Metallic, polymers and Ceramic Materials.. Mechanical properties. Manufacturing processes. Structural elements. Strength of the materialst. Process Equipment Design. **Understanding:** Properties and Behavior of materials. Engineering use of materials . Resistance of materials and its structural use. Behavior and stability of deformable bodies under external loads. Optimal material selection for process equipment . Behavior of cilindrical equipment under pressure. **Skills:** 2 , 3 ; 5 , 6 ; 8 ; 9 ; 11 ; 15	EIQ-347 Physical metallurgy, **4** EIQ-353 Elasticity, **4** EIQ-541 Mechanical Design of equipment, **4**

Table A3: Intended learning outcomes and associated course work – pag 5/8

Subject areas	**Knowledge, understanding and skills expected of the student in order to demonstrate achievement**	**Course work and other educational activities** Curricular Program
Economy & Organization (Obligatory credits: 12 Optional credits:3)	**Knowledge:** Economy. Elements of Commerce. Concepts of microeconomics and macroeconomics. Industrial organization. Human Resources Administration. Financial Information. **Understanding:** Basic financial concepts and Economics and Managerial Engineering techniques. Economical Factibility. Decissions on project investments. Market status. Organization Systems, strategic behavior of firms. **Skills:** 3; 8 ; 9 ; 11 ; 12 ; 14	ICA-533 Economic Analysis, **4** EIQ-657 Economic Engineering, **4** EIQ-603 Administration and Organization, **4** EIQ-610 Business Innovation and management, (Optional) **3**
Plant Operation (Obligatory credits: 7 Optional credits:0)	**Knowledge:** Chemical Plants estructures, common plant variables and its measuring. Pilot plant operating. **Understanding:** integration with theoretical concepts learned, and real processes. Team work and plant safety. Real operations and its statistical analysis. **Skills:** 4 ; 5 ; 9 ; 11 ; 12 ; 15	EIQ-545 Instrumentation Laboratory, **1** EIQ-457 Industrial Analysis Laboratory, **4** EIQ-655 Units Operations Laboratory, **2**
Research and Project (Obligatory credits: 18 Optional credits:9)	**Knowledge:** *Structure and Basic methods of research. Structure of engineering Project. Methods of Planning and control.* **Understanding:** *design, development and evaluation a Basic research.* *Design, planning and evaluation of engineering projects. integration of technical and economical knowledge. Use of effectively Communications.* ***Skills:** 5 ; 8 ; 9 ; 10 ; 11 ; 12 ; 13 ; 15*	EIQ-559 Research and Project 1, **6** EIQ-658 Research and Project 2, **6** EIQ-659 Research and Project 3, **6** EIQ-401 Project Planning and Control, (Optional) **3** EIQ-692 Project Evaluation and Management, (Optional) **3** EIQ-672 Plant Design, (Optional) **3**

Table A3: Intended learning outcomes and associated course work – pag 6/8

Subject areas	**Knowledge, understanding and skills expected of the student in order to demonstrate achievement**	**Course work and other educational activities** Curricular Program
Energy (Obligatory credits: 4 Optional credits:2)	**Knowledge:** Types of energy. Energy and society. Non-conventional energy. Management of energy. Engines. Production and sources of energy **Understanding:** processing and use of energy. Select types of energy. Importance of energy in actual society. **Skills:** 2 ; 3 ; 5 ; 9 ; 11	EIQ-355 Energy conversion processes, **4** EIQ-510 Introduction to Nuclear Energy, (Optional) **2**
English (Obligatory credits: 0 Optional credits:10)	**Knowledge:** Grammar. Reading and Basic communication **Skills:** 10 ; 11 ; 13	ING-301 Technical English 1, (Optional) **2** ING-302 Technical English 2, (Optional) **2** EIQ-486 Communicational english 1 , (Optional) **3** EIQ-489 Communicational english 2 , (Optional) **3**
Metallurgy (Obligatory credits: 0 Optional credits:23)	**Knowledge:** Minerals and Basic Geology. Fundamentals of metallurgical processes for minerals concentration. Basic design and cost evaluation. **Skills:** 2 ; 3 ; 5 ; 6 ; 8	EIQ-348 Geology and Minerals, (Optional) **4** EIQ-571 Minerals Resources, Eoconomy and Markets, (Optional) **3** EIQ-358 Size Reduction of Minerals, (Optional) **4** EIQ-446 Flotation, (Optional) **4** EIQ-450 Hydrometallurgy. (Optional) **4** EIQ-543 Pyrometallurgy, (Optional) **4**
Risk prevention and Environment (Obligatory credits: 0 Optional credits:14)	**Knowledge:** Definition of solid and liquid waste. Legislation. Design of treatment systems for waste disposal. Industrial Risk Analysis. **Skills:** 5 ; 6 ; 9 ; 11 ; 15	EIQ-562 Risk análisis, (Optional) **3** EIQ-695 Integral Environment management, (Optional) **3** EIQ-698 Environment and Industrial Safety, (Optional) **2** EIQ-669 Waste Water Treatment, (Optional) **3** EIQ-667 Environmental Engineering, (Optional) **3**

Table A3: Intended learning outcomes and associated course work – pag 7/8

Subject areas	**Knowledge, understanding and skills expected of the student in order to demonstrate achievement**	**Course work and other educational activities** Curricular Program
Personal Development (Obligatory credits: 0 Optional credits:4) General credits: 10)	**Knowledge:** Study methods. Communication methods. Team Work Methods. **Skills:** 11 ; 12 ; 13 ; 14 ; 15	EIQ-210 Mathematics learning techniques Workshop, (Optional) **2** EIQ-694 Personals skills trainnig, (Optional) **2** General Studies Curses
Others (Obligatory credits: 0 Optional credits:7)	**Knowledge:** Foods Processes. Fundamental Biotechnology. **Skills:** 5 ; 6 ; 9 ; 11 ; 15	EIQ-420 Food Industry, (Optional) **3** EIQ-501 Biothecnology, (Optional) **4**

Total Obligatory credits: 179

Optional Required Credits: 32

Generals Required Credits: 10

Table A3: Intended learning outcomes and associated course work – pag 8/8

Expected Skills for Chemical Engineering Graduate

1. Solves chemical engineering problems applying knowledge of mathematics, chemistry, physics, biology and engineering sciences.
2. Solves chemicals engineering problems applying knowledge of basic and engineering sciences, particularly mass and energy balances, mass, heat and momentum transfer, process analysis, chemical reaction kinetics, process control and unit operations. (intermediate level)
3. Uses communication and information technologies.
4. Design and conducts experiments in order to obtain relevant data to solve real engineering problems
5. Analyze and interpret information in solving engineering problems.
6. Design new systems, components and processes.
7. Models and simulates physical chemical process for their control and optimization.
8. Asses the technical and economical feasibility of industrial processes
9. Has written and oral skills.
10. Has Basic English written and oral skills.
11. Works and interact with his/her pairs in multidisciplinary teams.
12. Leads and communicates effectively with his/her subordinates.
13. Has the capacity of self learning to be up to date with latest developments in the field and to be able to forecast the tendencies of the chemical industry.
14. Has the ability to adapt to each particular organization culture and to its structure and procedures.
15. Understands his/her ethical and proffessional responsability, and he/she respects others points of view and beliefs in order to contribute to a suitable coexistence on the work place.

Credit: The credit is the unit of measurement of academic load of the student, a credit is the equivalent to three hours weekly of academic semester work. The hour of academic work will be understood like 45 minutes. The allocation of the number of credits of each subject will have to consider the time of direct teaching and the additional working time that they demand.

Knowledge, understanding and skills: The specific knowledge, understanding and skills that the student must acquire in order to develop the professional competencies described in Table A2.

Colour of the courses: Courses with available programs are shown in blue; courses in red are on review.

Table B1a: Entry qualifications *(selective admissions)* – pag 1/2

Fill in only where admission to the degree program is restricted or selective.

Mandatory entry qualifications (prior knowledge, understanding and skills)
For admission to a degree programme at the Pontifical Catholic University of Valparaiso, prospective students must take the National University selection Examination (PSU) plus a specific test of mathematics and science knowledge, administered by the Department of Evaluation, Measurement and educational (DEMRE) records of the University of Chile. For the Civil Chemical Engineering degree programme, students must apply with a score that takes into account the average of the high school qualifications , (NEM) and the National University Selection Examination, considering both general examination (Mathematics and Language and Communication) and the specific areas (History or Sciences). This programme requires students bearing a very high average score to complete the 45 vacancies available each year, considering that are 100 applicants per year on average. Entrance examination format and procedures are the same for all undergraduate degree programmes offered by all the Universities throughout the country. The entrance examination consist of a series of multiple-choice questions, a section testing logical reasoning skills, and exercises dealing with the basic knowledge acquired during pre-university schooling, and is designed to be curriculum-independent so that students from all types of secondary schools can be assessed on an equal basis. (PSU) The score to apply for the program is obtained from the following weighted: NEM: **25%** Language and Communication: **20%** Mathematics: **40%** History or Sciences: **15%** Other way is the especial system of admission, design for students who have especial conditions as prominent sportsman, foreign, professional whit academic degree, comes for another university program, and others.

Table B1b: Entry qualifications *(for orientation)* – pag 2/2

***Recommended* entry qualifications (prior knowledge, understanding and skills)**
It is recommended that students possess a good level knowledge in the field of mathematics (arithmetic, geometric and algebra), and basic chemistry and physics. It is also recommended a reading comprehension skills and grammar knowledge in Spanish language, and English writing. Language and Communication: Knowledge of basic concepts and general abilities of Language and Communication. Handling of Connectors and in Writing Plan. Understanding of Reading and Vocabulary. Mathematics: Numbers and Proportionality. Algebra and Functions. Geometry. Statistic and Probability.

Table B2: Curricular content – pag 1/15

Year	Course	Course Code	SSD/i	Credits	Total hours of the course				Instructor (may vary)	SSD/d	Qual.	Years held (varies)
				ECTS	L	A	E	f stu dy				
1	ALGEBRA	116	MAT	6	72		48	120	Instituto de Matemáticas Hector Luna Quintana		PH	V
1	DIFFERENTIAL CALCULUS	115	MAT	6	72		48	120	Instituto de Matemáticas Andrea Decidel Mora		PH	V
1	INTRODUCTION TO ENGINEERING	140	EIQ	6	96		48	144	Maria Victoria García de Pablo		JC	>3
1	GENERAL INORGANIC CHEMISTRY	222	QUI	6	72	48	24	144	Instituto de Química Carla Bobadilla Gomez Adriana Toro Rosales		A	V
1	MECHANIC PHYSICS 1	131	FIS	4	48		24	72	Instituto de Física Sergio Romero Perez		JC	V

Table B2: Curricular content – pag 2/15

1	INTEGRAL CALCULUS	117	MAT	4	48		24	96	Instituto de Matemáticas Sergio Iturra Olivares		PH	V
1	NUMERICAL METHODS	150	EIQ	4	48	24		72	Javier Silva Campino		PH	>3
	TOTAL YEAR 1			**36**	**456**	**72**	**216**	**768**				
2	ANALYTICAL CHEMISTRY	220	QUI	5	48	48	24	120	Instituto de Química Pedro Valencia Araya		A	V
2	MECHANIC PHYSICS 2	231	FIS	4	48		24	72	Instituto de Física Juan Vecchiola Vecchiola		A	V
2	SEVERAL VARIABLES CALCULUS	215	MAT	5	72		48	120	Instituto de Matemáticas Isabel Maturana Peña Aquiles Morales Nuñez		PH	V

Table B2: Curricular content – pag 3/15

2	DRAWING OF ENGINEERING 1	243	EIQ	3	24	48		72	Jaime Fernández Célis		JC	>3
2	ORGANIC CHEMISTRY	227	QUI	4	48		24	72	Instituto de Química Claudio Guzman Vicencio		A	V
2	ELECTROMAGNETIC PHYSICS	331	FIS	4	48		24	72	Instituto de Física Rodrigo Vergara Rojas		A	V
2	DRAWING OF ENGINEERING 2	253	EIQ	2	24	48		72	Jaime Fernández Célis		JC	>3
2	ELEMENTS OF PHYSICAL CHEMISTRY	242	EIQ	4	48		24	72	Luis Vega Alarcón		JC	>3

Table B2: Curricular content – pag 4/15

2	MATHEMATICS OPTIONAL 1		MAT	4	48		24	72	Instituto de Matemáticas Betzabe Gonzalez Yañez Carlos Tapia Rivadeneira Diego Lobos Maturana		PH	V
	TOTAL YEAR 2			**35**	**408**	**144**	**192**	**744**				
3	DESIGN OF EXPERIMENTS	344	EIQ	4	48		24	48	Jaime Fernández Célis		JC	3
3	PHYSICS METALLURGY	347	EIQ	4	48			72	Jorge Santana Cardo		JC	>3
3	GENERAL THERMODYNAMICS	342	EIQ	4	48		24	72	Eduardo Meyer		JC	>3

Table B2: Curricular content – pag 5/15

3	MATHEMATICS OPTIONAL 1		MAT	4	48		24	72	Instituto de Matemáticas Betzabe Gonzalez Yañez Carlos Tapia Rivadeneira Diego Lobos Maturana		PH	V
3	ELASTICITY	353	EIQ	4	48		24	72	Jaime Fernández Célis		JC	>3
3	FLUID MECHANICS	356	EIQ	4	48		24	72	José Torres Titus		JC	>3
3	CHEMICAL THERMODYNAMICS	354	EIQ	4	48		24	72	Gianni Olguin Cisternas		JC	>3
3	ENERGY CONVERSION PROCESSES	355	EIQ	4	48		24	72	Jorge Santana Cardo		JC	>3

Table B2: Curricular content – pag 6/15

	TOTAL YEAR 3			**32**	**384**	**0**	**168**	**552**				
4	PHYSICAL CHEMISTRY LABORATORY	456	EIQ	4	24	48		72	Maria Victoria García de Pablo		JC	>3
4	HEAT TRANSFER	453	EIQ	4	48		24	72	José Torres Titus		JC	>3
4	PROCESS CALCULATIONS	443	EIQ	4	48		24	72	Amelia Dondero		JC	3
4	OPTIONAL 3 (V)		EIQ	3	24			24	EIQ		JC	V
4	LABORATORY OF INDUSTRIAL ANALYSIS	457	EIQ	4	24	48		72	Maria Victoria García de Pablo		JC	>3

Table B2: Curricular content – pag 7/15

4	INSTRUMENTATION	442	EIQ	4	48		24	72	Javier Silva Campino		PH	>3
4	MASS TRANSFER	451	EIQ	4	48		24	72	José Torres Titus		JC	>3
4	KINETICS AND REACTOR DESIGN	447	EIQ	4	48		24	72	Eduardo Meyer		JC	>3
4	OPTIONAL 4 (V)		EIQ	3	24			24	EIQ		JC	V
	TOTAL YEAR 4			**34**	**336**	**96**	**120**	**552**				
5	MECHANIC DESIGN	541	EIQ	4	48		24	72	Gianni Olguin Cisternas		JC	>3
5	LABORATORY OF INSTRUMENTATION	545	EIQ	2	24	48		72	Javier Silva Campino		PH	>3

Table B2: Curricular content – pag 8/15

5	APPLIED COMPUTER SCIENCE	542	EIQ	4	48	24		72	Eduardo Meyer		JC	>3
5	ELECTROCHEMICAL PROCESS	544	EIQ	4	24	48		72	Horacio Aros		JC	>3
5	OPTIONAL 5 (V)		EIQ	3	24			24	EIQ		JC	V
5	RESEARCH AND PROJECT 1	559	EIQ	6	48			48	Eduardo Meyer Enzo Vergara		JC PH	3 3
5	ECONOMICAL ANALYSIS	533	ICA	4	48			48	Ingenieria Comercial Alejandro Bravo Diaz		PH	V
5	ELECTROCHEMISTRY LABORATORY	556	EIQ	4	24	48		72	Horacio Aros		JC	>3
5	PROCESS CONTROL	540	EIQ	4	48	24		72	Gianni Olguin Cisternas		JC	3

Table B2: Curricular content – pag 9/15

5	OPTIONAL 6 (V)		EIQ	3	24			24	EIQ		JC	V
	TOTAL YEAR 5			**38**	**360**	**192**	**24**	**576**				
6	RESEARCH AND PROJECT 2	658	EIQ	6				0	EIQ		JC	V
6	ECONOMICAL ENGINEERING	657	EIQ	4	48			48	Luis Vega Alarcón		JC	>3
6	LABORATORY OF UNIT OPERATIONS	655	EIQ	4	24	48		72	José Torres Titus Jaime Fernández Célis Jorge Santana Cardo		JC JC JC	3 3 >3
6	OPTATIVO 7 (V)		EIQ	3	24			24	EIQ		JC	V
6	OPTATIVO 8 (V)		EIQ	3	24			48	EIQ		JC	V

Table B2: Curricular content – pag 10/15

6	RESEARCH AND PROJECT 3	659	EIQ	6				0	EIQ		JC	V
6	ADMINISTRATION AND ORGANIZATION	603	EII	4	48			48	Escuela de Ingenieria Industrial Sergio Pizzagalli Urrutia		PH	V
6	OPTIONAL 9 (V)		EIQ	3	24			24	EIQ		JC	V
6	OPTIONAL 10 (V)		EIQ	3	24			24	EIQ		JC	V
	TOTAL YEAR 6			**36**	**216**	**48**	**0**	**288**				

Table B2: Curricular content – pag 11/15

OPTIONALS												
Year	Course	Course Code	Course Classif. (optional)	Credits	Total hours of the course				Instructor (may vary)	JCsition	Qual.	Years held (varies)
				ECTS	L	E	A	Self Study				
	DESTILATION	566	EIQ	4	48			48	Jaime Fernández Célis		JC	>3
	WORKSHOP OF LEARNING TECHNICS	210	EIQ	4	24			24	Carolina Vidal		PH	3
	MODERNS METHODS OF INFORMATION	479	EIQ	3	24			24	Patricio Proust		PH	>3
	RISK ANALYSIS AND LOSS CONTROL	562	EIQ	3	24			24	José Torres Titus		JC	>3
	MINERAL RESOURCES, MINING AND MARKET	571	EIQ	3	48			48	Gerardo Sánchez		PH	>3
	ENGLISH COMUNICATION WORKSHOP 2	489	EIQ	3	48			48	Anne Marie Bonschauer		PH	>3
	INTRODUCTION TO NUCLEAR ENGINEERING	510	EIQ	2	24			24	Alvaro Guzmán		PH	1
	CATALYSTS	503	EIQ	3	24			24	Carlos Carlesi		JC	1

Table B2: Curricular content – pag 12/15

	ENERGY BALANCES	360	EIQ	3	24			24	Luis Vega Alarcón		JC	2
	INDUSTRY OF FOOD	420	EIQ	3	48			48	Lina Razetto		PH	2
	LINEAL ALGEBRA DIFFERENTIAL EQUATIONS	216	MAT	4	48		24	72	Instituto de Matemáticas Betzabe Gonzalez Yañez		PH	V
	DIFFERENTIAL EQUATIONS	217	MAT	6	72		24	96	Instituto de Matemáticas Carlos Tapia Rivadeneira		PH	V
	AVANCED CALCULUS	305	MAT	4	48		24	72	Instituto de Matemáticas Diego Lobos Maturana		PH	V
	TECHNICAL ENGLISH 2	301	ING	2	24			24	Christian Zambrano Uribe		A	V
	INTEGRAL TRAINING WORKSHOP	694	EIQ	2	24			24	Carolina Vidal		PH	3
	WORKSHOP: COMUNICATIONS IN ENGLISH	486	EIQ	2	48			48	Anne Marie Bornschauer		PH	>3
	PLANNING AND CONTROL OF PROJECTS	401	EIQ	3	24			24	Gianni Olguin Cisternas		JC	>3

Table B2: Curricular content – pag 13/15

	INTEGRAL MANAGENMENT SYSTEM	695	EIQ	3	24			24	José Torres Titus		JC	2
	SOLID LIQUID SEPHRATION	467	EIQ	3	48			48	Jaime Fernández Célis		JC	>3
	PROCESS PLANT DESIGN	672	EIQ	3	48			48	Luis Vega Alarcón		JC	>3
	TECHNICAL ENGLISH 1	300	ING	2	24			24	Cristian Zambrano		PH	>3
	MATERIAL BALANCES	300	EIQ	2	24			24	Carlos Carlesi		JC	1
	MANAGEMENT OF BUSINESS INNOVATION	610	EIQ	3	24			24	Lina Razeto		PH	1
	EVALUATION AND MANAGEMENT OF PROJECTS	692	EIQ	3	24			24	José Torres Titus		JC	>3
	MINEROLOGIE AND GEOLOGY	348	EIQ	4	48			48	Gerardo Sánchez		PH	>3
	CONMINUTION OF MINERALS	358	EIQ	4	48			48	Lorena Álvarez		PH	>3
	FLOTATION	446	EIQ	4	48			48	Lorena Álvarez		PH	>3
	HIDROMETALLURGY	450	EIQ	4	48			48	Horacio Aros		JC	>3

Table B2: Curricular content – pag 14/15

	PIROMETALLURGY	543	EIQ	4	48			48	Jorge Santana Cardo		JC	>3
	SAFETY AND ENVIRONMENT	698	EIQ	2	24			24	José Torres Titus		JC	>3
	ENVIRONMENTAL MANAGEMENT	671	EIQ	3	24			24	José Torres Titus		JC	>3
	INDUSTRIAL WATER TREATMENTS	669	EIQ	3	24			24	José Torres Titus		JC	>3
	ENGINEERING AND ENVIRONMENT	667	EIQ	3	24			24	José Torres Titus		JC	>3
	FUNDAMENTALS OF BIOTECHNOLOGY	501	EIQ	3	24			24	Ingeniería Civil Bioquímica Daniel Undurraga		PH	V

Year: "1, 2, 3"; course JCsition in 1st, 2nd or 3rd year of program; "V" if variable.

Course: Course title, with hypertext link to the course description (see template in Annex II)

CFU: Credits

Credit: The credit is the unit of measurement of academic load of the student, a credit is the equivalent to three hours weekly of academic semester work. The hour of academic work will be understood like 45 minutes. The allocation of the number of credits of each subject will have to consider the time of direct teaching and the additional working time that they demand.

SSD/i: Code indicating course subject classification.

L hours: Scheduled lecture or classroom lesson hours.

E hours: Scheduled workshop hours.

Table B2: Curricular content – pag 15/15

A hours: Scheduled hours for other teaching activities (laboratory work, seminars, field trips, etc.).

Instructor: Name and surname of faculty member in charge of course, with hypertext link to CV.

SSD/d: Code indicating subject classification of curricular area covered by instructor; "X" for instructors with no designated curricular area or non-tenured faculty.

Qualification: code, e.g., JC: full professor, JP: partial professor, PH: hour professor, A other faculty

Years held: "1, 2, 3, >3" Number of consecutive years that the course has been held by this instructor.

Colour of the courses: Courses with available programs are shown in blue; courses in red are on review.

Table B3: Contact hours – pag 1/1

This table may be replaced with a link to online class schedule specifying lesson hours and locations.

http://www.eiq.cl/indicadores/ListaProgramacion1-09M.pdf

Table C1: Material resources and equipment – pag 1/3

Location	Type	Capacity	Characteristics and equipment	Address
IBC 2-12	Classroom	100	100 chairs, carpeted floor, fluorescent lighting, white board of four bodies, PC with Internet connection, datashow, Wi-Fi (IBC)	Av. Brasil 2241 Valparaiso
IBC 2-13	Classroom	90	90 chairs, carpeted, fluorescent lighting, white board of four bodies , PC with Internet connection, datashow, Wi-Fi (IBC)	Av. Brasil 2241 Valparaiso
FIN 3-3	Classroom	50	50 chair, plastic floor, natural and fluorescent lighting, white board of three bodies , Wi-Fi (FIN)	Av. Brasil 2241 Valparaiso
FIN 3-4	Classroom	50	50 chair, plastic floor, natural and fluorescent lighting, white board of three bodies , Wi	Av. Brasil 2241 Valparaiso
FIN 3-5	Classroom	50	50 chair, plastic floor, natural and fluorescent lighting, white board of three bodies , Wi	Av. Brasil 2241 Valparaiso
FIN 3-6	Classroom	60	60 chair, plastic floor, natural and fluorescent lighting, white board of three bodies , Wi	Av. Brasil 2241 Valparaiso

Location	Type	Capacity	Characteristics and equipment	Address
SALA 1	Classroom	50	50 chairs, ceramic floor, natural and fluorescent lighting, white board of four bodies, datashow, PC with Internet connection, datashow, Wi-Fi (EIQ)	General Cruz 34 Valparaiso
SALA 2	Classroom	35	35 chairs, ceramic floor, fluorescent lighting, white board of three bodies, datashow, PC with Internet connection, datashow, Wi-Fi (EIQ)	General Cruz 34 Valparaiso
SALA 3	Classroom	30	30 chairs and 30 tables, ceramic floor, natural and fluorescent lighting, white board of two bodies, datashow, PC with Internet connection, datashow, Wi-Fi (EIQ)	General Cruz 34 Valparaiso
IBC S1-2	Classroom	50	50 chairs, ceramic floor, fluorescent lighting, white board of three bodies, datashow, PC with Internet connection, datashow, Wi-Fi (IBC)	Av. Brasil 2241 Valparaiso
IBC S1-3	Classroom	50	50 chairs, ceramic floor, fluorescent lighting, white board of three bodies, datashow, PC with Internet connection, datashow, Wi-Fi (IBC)	Av. Brasil 2241 Valparaiso
Computer laboratory	Computer Center	20	20 free PC's with Internet connection, one head PC with Internet connection, carpeted floor, WiFi (EIQ), Generic and special ingeneering Softwares.	General Cruz 34 Valparaiso

Table C1: Material resources and equipment – pag 2/3

Location	Type	Capacity	Characteristics and equipment	Address
Industrial Analysis laboratory	Laboratory	25	Wi-Fi (EIQ-PUCV), ventilation system, materials and chemical reagents containers, library, refrigerator, stoves, flasks, espectrofotómetro de UV visible spectrophotometer, balances, PC with internet connection, phone line.	General Cruz 34 Valparaiso
Electrochemical laboratory	Laboratory	20	Wi-Fi (EIQ), ventilation system, materials and chemical reagents containers, cells, bath heaters, water distillator, polisher, hydraulic press, balances, Saybolt viscometer, power units.	General Cruz 34 Valparaiso
Metallurgy laboratory	Laboratory	15	Wi-Fi (EIQ), Sieve unit, hydraulic bank, flotation cell	General Cruz 34 Valparaiso
Unit Operations laboratory	Laboratory	25	Wi-Fi (EIQ), materials containers, natural and halogen lighting, phone line. Process equipment as: Destillation Columns, Pumps, absorption column, blower, compressor, dual effect evaporator, stirred tank reactor, rotary dryer, steam generator unit, steam boiler, heat transfer unit, lixiviation column, ball mill, gases containers, piping system, instrumentation system, and others.	General Cruz 34 Valparaiso
Láser laboratory	Laboratory	5	Wi-Fi (EIQ), ventilation system, UV visible spectrophotometer, stove, UV pulsating laser.	General Cruz 34 Valparaiso
Research laboratory 1	Laboratory	15	Wi-Fi (EIQ-PUCV), ventilation system, stoves, flasks, balances.	General Cruz 34 Valparaiso
Research laboratory 2	Laboratory	5	Wi-Fi (EIQ-PUCV), Refrigerator, atomic absorption spectrophotometer with PC and printer, cyclic voltmeter with PC, chromatograph unit.	General Cruz 34 Valparaiso
Research laboratory 3	Laboratory	5	Wi-Fi (EIQ-PUCV), supercritical extraction system, ions and sulfates analyzer.	General Cruz 34 Valparaiso
Study room	Lecture Hall	80	Chairs and tables, lockers, fluorescent lighting, ceramic floor, ventilation system, coffe store, WiFi (EIQ)	General Cruz 34 Valparaiso
Students center	Office	10	Wi-Fi(EIQ), PC with Internet connection, desks, phone line, library.	General Cruz 34 Valparaiso

Table C1: Material resources and equipment – pag 3/3

Location	Type	Capacity	Characteristics and equipment	Address
Faculty of Engineering Laboratories	Laboratory		Laboratory of Solid Mechanics, Laboratory of Electrotechnics, Laboratory of Fluid Mechanics, Laboratory of Thermodynamics and Heat Transfer.	Av. Brasil 2241 Valparaiso
Library FIN and PUCV	Learning room/library		The Library System of the Pontificia Universidad Catolica de Valparaiso satisfies the information requirements of the university community, develops skills to access and use of information on members who require it, and maintains physical and virtual spaces to create optimal learning conditions.	Av. Brasil 2241 Valparaiso Av. Brasil 2950 Valparaiso
Sport Facilities	Gym and others		Chess, Athletics, Diving, Basketball, Sport Climbing, Judo, Soccer, Karate, Swimming, Tennis, Table Tennis, Volleyball, Handball, Taekwondo.	Av. Brasil 2950 Valparaiso
Student's Restaurants	Dining Place		Meals every day.	Av. Brasil 2241 Valparaiso

Table D1: Student enrolment and progression data – pag 1/2

Example of survey performed at end of calendar year 2009 Current academic year: 2009**(Y)** Reference year 2009 **(Y)** Full-time students	N° of student	% from academic secondary schools	% from technical schools	% from business schools	% from other secondary institutions	% from other university programs	% with final secondary school grade ≥ 90/100*	% with final secondary school grade ≤ 69/100*	% residing out of province	% residing out of region	% who have earned no credits	% who have earned **to less than** 1/3 credits	% who have earned over 1/3 and up to 2/3	% who have earned **Over 2/3 or more**	% who have earned no credits	% who have earned **to less than**	% who have earned over 1/3 and up to 2/3	% who have earned **Over 2/3 or mr**	% who have earned no creditsi	% who have earned **to less than** 1/3 credits	% who have earned over 1/3 and up to 2/3	% who have earned **Over 2/3 or more**
1.1 – No. of 1st year students registered in A.Y. 2009 /(Y)	**52**	**94**	**2**			**4**	**42**	**0**	**62**	**44**												
2.1 – No. of 1st year students registered in A.Y. 2008/ (Y-1)	**50**	**96**	**4**				**20**	**4**	**63**	**45**	**4**	**8**	**40**	**48**								
3.1 – No. of 1st year students registered in A.Y. 2007 / (Y –2)	**51**	**94**	**4**			**2**	**33**	**4**	**67**	**54**					**0**	**0**	**24**	**76**				
4.1 – No. of 1st year students registered in A.Y. 2006 / (Y– 3)	**47**	**94**	**6**				**15**	**15**	**77**	**55**									**0**	**0**	**46**	**54**

Table D1: Student enrolment and progression data – pag 2/2

	Total	Obtained in legal end date (%)	Obtained in 1 yr of legal end (%)	Obtained in 2 yr of	Obtained in 3 yr of legal end (%)	% with grade ≥ 90% of scale	% with grade ≤ 90% of scale
5.1 – No. of graduates in calendar year 2008(A)	17	30	47	23	0	0	100

Part-time students *(if applicable)*	Average number of course credits earned in current academic year	% who have earned 0 to 33% of required course credits in current academic year	% who have earned 34 to 66% of required course credits in current academic year	% who have earned 67% or more of required course credits in current academic year
6.1 – No. of part time students enrolled in A.Y. 2002 – 2003 / (Y-1, Y)	✧	Ⅱ	Ⅱ	Ⅱ

* National average: "% with final secondary school grade ≥ 90/100" : 11%

Ⅱ Credits earned by successfully completing examinations no later than 31 Oct., 2003 (**31/10/Y**)

✧ Credits earned by 31 July, 2003 **(31/7/Y)**

Table D2: Further information (optional) – pag 1/1

Exchange programs

The University has an active international exchange program administered by the management processes of international exchange (DPII), which through the program of student mobility, manages the exchange of students at different institutions in America, Europe and Asia.

During the last five years, seven students of the program went to dual-degree program in the Polytechnic of Torino, Italy, one of which got a doctor degree in chemical engineering. Are currently have two students in Torino, Italy, one of which extended the doctoral programme, as well as an exchange student at the University of Karlsruhe, Germany.

http://ucv.altavoz.net/prontus_unidacad/site/artic/20070515/pags/20070515101028.html
http://ucv.altavoz.net/prontus_unidacad/site/artic/20070515/pags/20070515123234.html

Links with Industry

The School has traditional links with local and national industry, including mining, chemical, petroleum, food, waste treatment, and other sectors.

The E.I.Q. promotes this links for provides opportunities for students in their last years of university, to carry out practical training and final projects in companies and institutions, and often leads to first employment.

Although industrial placement is not compulsory, but recommended, there has been an increasing number of final year students involved in company placements, often resulting in offers of employment after graduation. Many students take advantage of these placements to carry out their final project in a real world context which fulfills company needs.

In the academic year 2007, 83% of students carried out their final projects in the industry.

Major companies where projects are carried out : Codelco Chile, ENAP refineries, Anglo American Chile, BHP Billiton, Oxiquim, ESVAL, Corpora Tres Montes, and others. http://www.eiq.cl/A_Tecnica.htm

Table D3: Programme analysis, monitoring and review – pag 1/2

Action	Responsibility	Timeline	Documents on record	Document availability
Systematic collection of data of admission process	- degree program coordinator	- Once a year: on first academic month	-**Admission report**: information about numbers, procedence and scores of new students admitted.	http://www.eiq.cl/indicadores/AdmisionQui-08.pdf
Systematic collection of data on students' academic achievement	- degree program coordinator	- Every Semester: on first month of the semester - Once a year: on first academic month	-**Academic activity report:** information about reprobation (per areas and courses), and student's enrollment. -**Anual academic report:** information about general development of program, includes reprobation, advance rates, time graduates average. - **Anual Graduate report:** information about numbers and study times average.	http://www.eiq.cl/indicadores/ResultadosAcademicos2-08.pdf http://www.eiq.cl/indicadores/GlobalQui-07.pdf http://www.eiq.cl/indicadores/Egreso07.pdf
Systematic surveys of participating students' opinions	- degree program coordinator	- Every Semester: on last academic moth.	- **Teaching surveys report**: information about student's evaluation of courses. Professor's scores, and averages.	http://www.eiq.cl/indicadores/ResultadoEncuestaDocente1-08.pdf

Table D3: Programme analysis, monitoring and review – pag 2/2

Action	Responsibility	Timeline	Documents on record	Document availability
Systematic surveys of students' opinions at program completion	– Extension coordinator	– Once a year: December to February.	– **Alumni surveys report:** information about graduate´s evaluation of program.	http://www.eiq.cl/indicadores/ResultadosExAlumnos2007.pdf
Systematic surveys of professional outlets for graduates after receiving degree	– Extension coordinator	– Once a year December to February.	–**Employers surveys report:** information about employer's opinion's of professional profile.	http://www.eiq.cl/indicadores/ResultadosEmpleadores07.pdf
Project for curriculum innovation (Mecesup Project)	Mecesup Committee	End in July 2010	–**Summary of Project** –**Table of competencies** for chemical engineering graduate	http://www.eiq.cl/indicadores/ResumenMecesupEIQ.pdf http://www.eiq.cl/indicadores/Tabla_Competencias_Perfil_deEgreso_23DIC2008.pdf
Review				

Action: The four actions indicated above are monitoring processes which higher education institutions are already required by law to perform, or which they carry out on their own initiative. The table is thus a means of summarizing and organizing data which should already be available.
Responsibility: Specify ultimate responsibility for each action (degree program coordinator, internal review board, etc.).
Timeline: Specify when each action is performed (every semester, once a year, at the end of the three-year program, etc.).
Documents on record (format is similar to that used for Table A1): specify supporting documents for each action.
Document availability (format is similar to that used for Table A1): for each action, specify availability details for the documents indicated in the preceding column.