



PHILIPPINE ASSESSMENT STATEMENT
June 2007

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PREAMBLE

The Asia Pacific Economic Cooperation (APEC) Human Resource Development Working Group Steering Committee for mutual recognition of professionals developed the initiative for the APEC Engineer Register since 1997.

The APEC (HRDWG) has established a project to assist professional engineering bodies to maintain an APEC Engineer Register in each economy as a basis of a transparent system to facilitate the mobility of professional engineers for cross-border practice within the region.

The intent of the APEC Engineer Register is to recognize the equivalencies in the qualification and experience of practicing professional engineers in the participating economies and to facilitate trade in engineering services between participating economies. Admission on the APEC Engineer Register will be granted a high degree of mutual exemption from further assessment when practicing in any of the participating economies.

The Philippines participated in the Steering Committee Meetings of the APEC Engineer Register Project under the APEC-HRDWG through the representatives of two (2) government agencies, namely: Commission on Higher Education (CHED)¹ and the Professional Regulation Commission (PRC)², and one (1) private organization, the Philippine Technological Council (PTC)³. The three agencies composed the APEC Engineer Register-National Monitoring Committee (AERP-NMC). The APEC Engineer Coordinating Committee shall approve the administration of the APEC Engineer Register within the participating economies.

The Philippine Assessment Statement was initially submitted to the APEC Coordinating Committee in June 2000. It has been developed through the active participation of a large group of professional engineers and educators involved in engineering education in this country.

¹The **Commission on Higher Education (CHED)** is a regulatory body for higher education established under Republic Act 7722.

²The **Professional Regulation Commission (PRC)** is a regulatory body to administer, implement and enforce the regulatory policies of the national government with respect to the licensing of the various professions and occupation under its jurisdiction.

³The **Philippine Technological Council (PTC)** is a national association of accredited organizations of professionals of the technological group composed of engineers and architects.

APEC ENGINEER REGISTER PHILIPPINES (AERP)

PART A - APEC ENGINEER MONITORING COMMITTEE PHILIPPINES

A. 1. APEC Engineer Register Philippines- National Monitoring Committee (AERP-NMC)

By virtue of the Memorandum of Agreement (MOA) entered into by the Commission on Higher Education (CHED), Professional Regulation Commission (PRC) and the Philippine Technological Council (PTC) on May 2000, the APEC Engineer Register Philippines-National Monitoring Committee (AERP-NMC) was created.

The AERP-NMC will conduct the following activities:

1. develop, monitor and implement the APEC Engineer Register in accordance with the criteria and provisions of the APEC Substantial Equivalence and Mutual Exemption Framework;
2. recommend to the APEC Engineer Coordinating Committee the approved applicants in the APEC Engineer Register project;
3. conduct activities relating to the APEC Engineers Register Project;
4. perform such other functions as required to be undertaken in the establishment of the APEC Engineer Register, which are related to the Established APEC Engineer Framework.

A.2 Composition of AERP-National Monitoring Committee

The Philippine AERP National Monitoring Committee is composed of representatives from the Commission on Higher Education, the Professional Regulation Commission with the rank of Chairman/Commissioner or its equivalent and the President of PTC or its designated representative. The committee representatives shall choose their own chair on rotational basis annually, to monitor the implementation of the APEC Engineer Register Project in the Philippines.

From 2005-2007, the AERP-NMC are as follows:

1. Hon. Leonor Tripon-Rosero
Chairperson
Professional Regulation Commission
Chairperson, AERP-NMC
2. Hon. Carlito S. Puno
Chairman
Commission on Higher Education (CHED)
3. Engr. Enrico C. Nera
President
Philippine Technological Council (PTC)

A.2.1 Panel of Experts:

The Panel of Experts is a sub-committee of the National Monitoring Committee (NMC) that assists in examining the qualifications and experiences of applicants who want to be registered at APEC.

A.2.2 NMC Technical Working Group (TWG)

1. Professional Regulation Commission (PRC)

Engr. Corazon de los Reyes-Romero
Professional Regulatory Board
Professional Regulation Commission
P. Paredes St., Sampaloc, Manila, Philippines
Telephone INT+63 2 734-8238;
Facsimile INT+63 2 735-4703
Email webmaster@prc.gov.ph

2. Commission on Higher Education (CHED)

Ms. Luisa S. Valencia
Director, International Affairs Service
Commission on Higher Education
G/ F DAP Building, San Miguel Avenue
Ortigas Center, Pasig City, Philippines
Telephone INT+63 2 687 1317
Facsimile INT+63 2 637 3571
Email ias@ched.gov.ph

3. Philippine Technological Council (PTC)

Engr. Alfredo D. Antonio
Chairman
International Relations Committee
Philippine Technological Council
Telephone INT + 63 2 7139694
Facsimile INT + 63 2 7139694
Email ptc@ptc.org.ph

A.3 SECRETARIAT

The AERP-Philippine Secretariat is based at the Office of the Standard and Inspection Division headed by Ms. Dora Almadro-Lejita

Head Office

Location: Professional Regulation Commission
1st Flr. , Secretariat Unit
P. Paredes St., Sampaloc, Manila
Philippines
Tel.: 63 2 314-0048
Fax: 63 2 314-0048

Contact Person:

Mr. Lord Louis Valera
OIC, International Affairs Division
Telephone INT+63 2 735-4703; (63 2) 314-0024
Facsimile INT+63 2 735-4703
Website: www.prc.gov.ph

A.4 RELATION OF THE NATIONAL MONITORING COMMITTEE TO THE PANEL OF EXPERTS

The panel of Experts for each discipline shall pass upon the qualifications of applicants for registration in the APEC Engineer Register in accordance with the criteria provided in the APEC Substantial Equivalence and Mutual Exemption Framework. The Panel shall have the following areas of assessment.

The CHED representative shall review the documents of the applicant to establish substantial educational compliance.

The PRC representative shall take charge of the professional practice, ethical and moral qualifications.

The PTC representative shall take charge of the assessment and evaluation of professional experience qualifications

The Panel of Experts on the basis of their assessment of the documents submitted by the applicants shall recommend to the National Monitoring Committee the candidates to the APEC Engineer Register following the Assessment Mechanism approved by the APEC Engineer Coordinating Committee for the APEC Engineer Register Project.

PART B - ASSESSMENT MECHANISM

B.1 Eligibility for Admission to the APEC Engineer Register Philippines

Eligibility for admission to the APEC Engineer Register Philippines is limited only to engineers who have:

1. completed an accredited or recognized engineering program;
2. been assessed as eligible for independent practice
3. gained a minimum of seven years professional experience after registration;
4. spent at least two years in responsible charge of significant engineering work;
and
5. maintained continuing professional development at a satisfactory level.

All applicants seeking registration at APEC must also be bound by the Codes of Professional Ethics enforced in the Philippines and by any other APEC member economy within which they shall practice.

B.2 Accreditation or Recognition of Higher Engineering Education Programs

B.2.1 Recognition of Local Engineering Degrees

The Commission on Higher Education (CHED) is the instrumentality of the government to carry out mandates on higher education as provided for in Republic Act 7722. It gives recognition or government accreditation to all engineering programmes in the Philippines that meet the standards required. Its basic policy is to gear higher education institutions towards the provision of quality, accessible, responsive and effective education. The general policies and guidelines for the establishment and operation of each higher education program are defined in the Policies and Standards formulated by the Commission on Higher Education. Specific provisions in the policies and guidelines cover the authorization, mission statement, administration, faculty, curriculum, instructional standards, library, research, laboratory facilities, admission requirements, residence and unit requirements.

It is the policy of the CHED to encourage and assist educational institutions to attain high levels of quality in the educational programs or courses of studies offered. In this regard, a measure was undertaken by the CHED to continuously identify and select the country's centers of excellence and centers of development based on the following criteria:

- ❑ Excellent academic and research program;
- ❑ Instructions should have achieved excellence;
- ❑ Highly qualified faculty;
- ❑ Complete facilities
- ❑ Performance of schools as substantiated by their high passing percentage in the professional licensure examinations;
- ❑ Accreditation of program by the private accrediting body.

A list of engineering degrees recognized by the CHED is maintained. A checklist of requirements and guidelines for granting government permit and authority and recognition is available upon request.

For the APEC ENGINEER REGISTER PHILIPPINE PROJECT, higher academic qualifications are considered for satisfying the standards of APEC member countries. The applicant to the APEC Engineer Register who holds a baccalaureate degree in the following recognized Engineering institutions is considered to have met the academic qualification requirements;

- a. **Center of Excellence (COEs) or Center of Development (CODs)⁴;**
- b. **Accreditation of Engineering Program from any private accrediting agency under the Federation of Accrediting Agencies of the Philippines and National Network of Quality Accrediting Agencies (NQAA)⁵;**
- c. **Autonomous and Deregulated higher educations institutions**

B.2.2 Recognition of Foreign Engineering Degrees

An applicant who obtained engineering degree overseas are evaluated and given recognition provided that the engineering degree is obtained from institutions accredited by the professional bodies⁶ of that economy and are duly recognized by the CHED.

⁴**Centers of Excellence (COEs) and Centers of Development (CODs)** are the higher education institutions having the highest levels of standard in the quality of their instruction research and extension service.

⁵Voluntary Accreditation is a mechanism through which educational institutions ensure the academic quality of programs being offered. The accrediting bodies are under an umbrella organization called the Federation of Accrediting Agencies of the Philippines.

⁶Accreditation of foreign engineering degrees by professional bodies refers to the ABET List or the Engineering Council List.

B.2.3 Alternative Assessment Mechanism

Additional qualifications are considered for APEC Engineer applicant who obtained his engineering degree in academic institutions not in the first track. Candidates lacking the required academic qualifications are required to submit considerable responsible training and experience as engineers as follows:

- a. Training/specialization in the same field of technical engineering practice;
- b. Engineering Practice in the same field of technical expertise;

An applicant who qualifies in the Alternative Assessment will be issued certificate by the Panel of Experts that he/she has pursued and completed the alternative qualification requirements and thus has obtained substantial equivalence.

B.3 Eligibility for Independent Practice

Eligibility for independent professional engineering practice shall cover licensing, authorization or special permit to practice.

B.3.1 Licensing Requirements

Licensing refers to passing a government licensure examination conducted and given by the Professional Regulation Commission (PRC) and the Professional Regulatory Board (PRBs). Requirements for Filipino engineering graduates to take the licensure examination after graduation from higher education institutions are as follows:

1. A citizen of the Philippines;
2. At least twenty-one years of age;
3. Of good moral character
4. A baccalaureate degree holder of the course for examination.

Registration in the roll or register of professionals and issuance of a Certificate of Registration/ Professional License follows after passing the licensure examination.

For foreign professionals, the PRC, upon recommendation of the PRBs, may authorize the issuance of a **SPECIAL TEMPORARY PERMIT** to foreign professionals who desire to practice in the country under reciprocity and other international agreements.

Applicants shall submit for verification authenticated documents or proofs of licensing, authorization or special permit to practice engineering profession.

B.4 Seven Years Professional Experience

The seven years experience shall refer to the professional independent practice in engineering discipline in which the applicant claims expertise.

The professional independent practice of seven years must be fully supported by documents highlighting the applicant's professional competencies and responsibilities in the discipline in which he/she claims expertise.

The documentation requirements shall be in accordance with the APEC Engineer Manual. The evidences or proofs which the applicant must submit for assessment and/or evaluation generally must include the following:

- Description of specific engineering program or project;
- The applicant's specific responsibilities and accountability, costs of the undertaking,
- Dates of applicant's engagement of professional practice, and clientele or beneficiaries served.
- Samples of the applicant's own technical outputs produced and used, before, during and after the incumbency of the program or project.

All proof and evidence shall be sworn and notarized

The appointed Panel of Experts shall conduct the assessment and evaluation of the documents. Whenever necessary, they shall require the applicant to submit to an interview.

The process is supported by the recent competency standard handbook.

B.5 Two Years Experience Involving Responsible Charge of Significant Engineering Work

The two years experience involving responsible charge of significant engineering work shall mean the applicant's professional practice of engineering profession that involves and clearly demonstrate exercise of independent professional judgement, responsibility and accountability in an engineering program of projects of considerable complexity. The two years may be within the seven years of professional experience of the applicant after passing the licensure examinations.

All claims by the applicant of responsible charge of significant engineering work shall be accompanied and supported by sworn and notarized evidence or proof, which shall be further, subjected to verification and validation by the assessment and/or evaluation panel. These evidences or proofs must specify clearly individual

engineering program or project, dates of engagement, costs, complexity, and clientele or beneficiaries served.

B.6 Continuing Professional Development

Continuing Professional Development (CPD) is a critical part of ongoing development of competence for all engineers throughout the professional lives. The assessment of competence is part of the CPD process as it enables engineers to target any gaps in competence and gain recognition for the standard of competence achieved.

Engineers have a responsibility to keep themselves informed and updated in order to maintain their competence and competitiveness, to strive to advance the knowledge within which they practice and to seek continuing professional development.

The current CPD process requires that all evidences or proofs shall be sworn and notarized and must specify one's methods or combination of methods or technical works in one's field of specialization; attendance at seminar, workshops, conference, university courses attended, preparation and publication of technical papers, and/or participation in professional organizations or technical societies.

B.7 Compliance with Code of Conduct

The code of conduct of the professional engineer is prescribed in the respective Code of Ethics of the Regulatory Boards. The Professional Regulation Commission also maintains a record of engineers who violates with their respective code of conduct and ethical practice. PRC shall attest the compliance of applicants to the Code of Ethics in the assessment process.

For foreign engineers seeking admission to the local register, certification shall be issued by the respective APEC National Monitoring Committee.

B.8 Audit of APEC Engineers

The audit of engineers registered in the APEC Engineers Register shall be done every three (3) years to ascertain compliance with the requirements of APEC Engineers, and similarly to assure that information and records provided are up-to-date viz a viz continuing professional development of the registered engineers.

The competency standard system shall be used to audit APEC engineers to add strength to the Philippine assessment mechanism.

PART C – ENGINEERING DISCIPLINES

The following engineering disciplines are initially identified by the National Monitoring Committee as the areas for registration: **Aeronautical Engineering**; **Agricultural Engineering**; Chemical Engineering; Civil Engineering; Electrical Engineering; **Electronic and Communications Engineering**; **Geodetic Engineering**; Mechanical Engineering; **Metallurgical Engineering**; Mining Engineering; **Naval and Marine Engineering**; **Sanitary Engineering**

Note:

Blue: Proposed Engineering disciplines

Red: Not in the APEC Manual Version 4 but included in the Assessment Statement since 2003

C.1 ENGINEERING PRACTICE AREAS

The following engineering disciplines are initially identified by the APEC ENGINEER REGISTER PHILIPPINES National Monitoring Committee (AERP-NMC) as the areas for registration:

Aeronautical Engineering

Indicative Areas of Aeronautical Engineering Practice

Practice of Aeronautical Engineering

The practice of aeronautical engineering shall constitute in holding out oneself as skilled in the knowledge, science, and practice of aeronautical engineering, and as qualified to render professional services as an aeronautical engineer; or offering or rendering, or both, on a fee basis or otherwise, services such as planning, designing, analyzing, constructing, assembling, installing, altering or maintaining of aircraft structures, power plants or accessories through scientific or accepted engineering practice, or the teaching of the same in any university, college, institute, or school of learning duly recognized by the Government of the Philippines. An aeronautical engineer shall be considered such in the practice of his profession, if the nature and character of his employment whether as an officer or employee in a private enterprise or educational institution involves decision-making requiring professional knowledge in the science of aeronautical engineering, and such employment or position requires that the holder thereof must be an aeronautical engineer; or if he holds or is appointed to a position in the aeronautical engineering occupational group in the government or in government-owned or controlled corporations, including those performing proprietor functions, where a civil service eligibility as an aeronautical engineer is a prerequisite.

Agricultural Engineering

Indicative Areas of Agricultural Engineering Practice

Practice of Agricultural Engineering

Refer to the profession requiring the application of the fundamental and known principles of engineering to the peculiar condition and requirements of agriculture as an industry and as a field of science, and shall include, but not limited to, the following:

1. Consultation, valuation, investigation and management services on agricultural engineering;
2. Management or supervision and the preparation of engineering designs, plans, specifications, project studies and estimates for agricultural, aquaculture and fishery, and forest product machinery, agricultural buildings and structures, farm electrification and energy systems, agricultural processing equipment, irrigation and soils conservation systems and facilities, agricultural waste utilization systems and facilities;
3. Conducting research and development, training and extension work, and consultancy services on agricultural engineering facilities/services, system and technologies;
4. Testing, evaluation and inspection of agricultural, fishery and forest product machinery and other related agricultural engineering facilities and equipment.
5. Management, manufacturing and/or marketing of agricultural machinery and other related agricultural engineering facilities and equipment;
6. Teaching, agricultural engineering subjects in institution of learning in the Philippines;
7. Employment with the government provided such item or position requires the knowledge and expertise of an agricultural engineer.

Chemical Engineering

Indicative Area of Chemical Engineering Practice

Practice of Chemical Engineering. -

- a. What constitutes practice of chemical engineering: A person shall be deemed to be practicing chemical engineering or rendering chemical engineering service within the meaning and intent of this Act who shall, for a fee, salary or other reward or compensation, paid to him or through another person, or even without such reward or compensation, render or offer to render professional chemical engineering service in the form of consultation, investigation, valuation, planning, designing or preparation of specifications for or estimates of industrial plants or undertake the supervision of construction, erection, installation, alteration, or operation of industrial plants.
- b. The term industrial plant as used in this Act, shall mean any plant in which unit process and unit operation are involved.
- c. The term unit process as used in this Act, shall mean the type of chemical change which is involved in the manufacture of industrial products.

The term unit operation as used in this Act, shall mean a type of physical operation by which a desired step in an industrial process is controlled or conducted.

Civil Engineering (*Practices Area of Civil Engineering includes Structural Engineering*)

Indicative Areas of Civil Engineering Practice

Practice of Civil Engineering

The meaning and intent of this Act shall embrace services in the form of consultation, design, preparation of plans, specifications, estimates, erection, installation and supervision of the construction of streets, bridges, highways, railroads, airports and hangars, port works, canals, river and shore improvements, lighthouses, and dry docks; buildings, fixed structures for irrigation, flood protection, drainage, water supply and sewerage works; demolition of permanent structures; and tunnels. The enumeration of any work in this section shall not be construed as excluding any other work requiring civil engineering knowledge and application.

Electrical Engineering

Indicative Areas of Electrical Engineering Practice

Practice of electrical engineering. - a person is deemed to be in the practice of electrical engineering when he renders or offers to render professional electrical engineering service in the form of:

1. Consultation, investigation, valuation and management of services requiring electrical engineering knowledge;
2. Design and preparation of plans, specifications and estimates for electric powers systems, power plans, power distribution system including power transformers, transmissions lines and network protection, switchgear, building wiring, electrical machines, equipment and others;
3. Supervision of erection, installation, testing and commissioning of power plans, substation, transmission lines, industrial plans and others;
4. Supervisions of operation and maintenance of electrical equipment in powers plants, industrial plants, watercrafts, electric locomotives and others;
5. Supervisions on the manufacture and repair of electrical equipment including switchboards, transformers, generators, motors, apparatus and others;
6. Teaching of electrical engineering professional subject; and
7. Taking charge of the sale and distribution of electrical equipment and systems requiring engineering calculations or applications of engineering data.

Electronics and Communications Engineering

Indicative Area of Electronics and Communications Engineering Practice

Practice of Electronics and Communications Engineering

No person shall offer himself in the Philippines as, or use the title 'Electronics and/or Communications Engineer' or any word, letter, figure, or sign whatsoever, tending to convey the impression that he is an electronics and/or communications engineer, or advertise or indicate in any manner that he is qualified to perform the work of an electronics and communications engineer without holding a valid certificate of registration as electronics and communications engineer issued by the Board in accordance with this Act, except as provided under Section eleven hereof.

It shall be unlawful for any firm, company, or corporation, to offer itself to the public as electronics and communications engineer without the certification, supervision and/or guidance of a duly registered electronics and communications engineer.

Geodetic Engineering Practices Area of Geodetic Engineering includes Geotechnical Engineering)

Indicative Areas of Geodetic Engineering Practice

Practice of Geodetic Engineering

The practice of Geodetic Engineering is a professional and organized act of gathering physical data on the surface of the earth with the use of precision instruments. It is also the scientific and methodical processing of these data and presenting them on graphs, plans, maps, charts or documents. It shall embrace, but is not limited to, the following activities:

1. Professional Geodetic Engineering services with the use of surveying and mapping equipment such as graduated rods, measuring tapes, transits, levels, theodolites, fathometers/echosounders, electronic distance meters, global positioning systems, stereoplotters and all other instruments that are used to determine metes and bounds of lands positions of points on the surface of the earth, water depths, underwater configuration, ground elevation, gravity, isostasy, crustal movements and the size and shape of the earth, and other instruments used for construction survey, and those instruments used to guide the installation of large industrial equipment and machineries;
2. Horizontal and vertical control surveys and political boundary surveys;
3. Land surveys to determine their metes and bounds and prepare the plans thereof for titling and for other purposes;
4. Subdivision, consolidation and/or consolidation subdivision of titled properties;
5. Submission of survey plans of subdivided, consolidated and/or consolidated-subdivision titled properties to the government agencies concerned; hereafter, such plans on surveyed titled properties submitted by geodetic engineers shall not be subject to verification and approval;
6. Preparation and making of sketch, lot and location plans;
7. Conduction of engineering surveys and the technical preparation of engineering survey plans such as topographic, hydrographic, tidal, profile, cross-section, construction and boundary surveys;
8. Parcellary surveys of lands traversed by infrastructure projects; and the preparation of subdivision plans;
9. Conduction of gravimetric and photogrammetric survey and the technical preparation of such survey plans;

10. Survey and mapping works such as the preparation of geographic and/or land information systems;
11. Survey to determine and establish line and grade for the construction of buildings and other structures and its attachments;
12. Construction of as-staked and as-built surveys for infrastructures;
13. Conduction of mineral and mining surveys;
14. Installation of machineries requiring the use of precision instruments;
15. Engagement in the transfer of the knowledge and technology of geodetic engineering in any institution of learning;

Mechanical Engineering

Indicative Areas of Mechanical Engineering Practice

Practice of Mechanical Engineering

A person shall be deemed to be practicing mechanical engineering or rendering mechanical engineering service within the meaning and intent of this Act when he performs the following: Consultation, valuation, investigation and management services requiring mechanical engineering knowledge; Engineering design, preparation of plans, specifications and projects studies or estimates for mechanical equipment, machinery, or processes of any mechanical works, projects or plants; Management or supervision of the erection, installation, alteration, testing and commissioning of mechanical equipment, machinery, or processes in mechanical works, projects or plants; Management, supervision, operation, tending or maintenance of any mechanical equipment, machinery or processes in mechanical work, projects or plants; Management or supervision of the manufacture, sale, supply or distribution of mechanical equipment parts or components; Teaching of mechanical engineering professional subjects in government recognized and accredited engineering schools; and Employment in government as a professional mechanical engineer, registered mechanical engineer, or certified plant mechanic if the nature and character of his work is in line with his profession requiring professional knowledge of the science of mechanical engineering.

Metallurgical Engineering

Indicative Areas of Metallurgical Engineering Practice

Practice of Metallurgical Engineering

A person shall be deemed to be practicing metallurgical engineering within the meaning and intent of this Decree who shall, for a fee, salary or other reward or compensation, paid to him or through another person, or even without such reward or compensation, render or offer to render professional service in metallurgy or metallurgical engineering in the form of consultation, investigation, valuation, planning, designing or supervision of operation.

The term metallurgy or metallurgical engineering as used in this Decree, shall mean the teaching and practice of the science and technology of preparing minerals and metals from ores by separating them from mechanical mixture and chemical combination and/or finally processing them for use. Metallurgy or metallurgical engineering embraces:

Mining Engineering

Indicative Areas of Mining Engineering Practice

Practice of Mining Engineering

A person shall be deemed to be practicing mining engineering or rendering mining engineering service within the meaning and intent of this Act who shall, for a fee, salary or other reward or compensation, paid to him or through another person, or even without such compensation, render or offer to render by means of signs, cards, advertisements, written reports, and/or in any other manner offer to practice mining engineering in the form of consultation, investigation, mining reports, valuation and ore reserve calculation; take charge of, direct and/or supervise underground and/or surface mining, open cuts, pits and/or quarries; shaft sinking, tunneling, stopping, dredging, hydraulicking and sluicing for minerals and/or mineral products: Provided, That the above functions are exercised in a responsible and independent capacity.

Naval Architecture and Marine Engineering

Indicative Areas of Naval Architecture and Marine Engineering Practice

Practice of Naval Architecture and Marine Engineering

The practice of naval architecture and marine engineering within the meaning and intent of this Act shall embrace services in the form of plans, specifications, estimates, or supervision of the construction, alteration, or structural survey of any floating vessel or equipment, self-propelled or otherwise; plans or layouts, specifications, estimates or supervision of the installation of marine power plants and associated equipment including screw propeller, paddle wheel and Voith-Schneider propeller, or any other means of transmitting power from the main

propulsion engine(s) to the buoyant fluid, marine auxiliaries, including refrigeration, air conditioning, ventilation, and heating plants and equipment and hull machineries; management, maintenance or operation of any shipyard, graving dock marine slipways, and any facility for the salvage, repair or maintenance of floating vessels or equipments. The enumeration of any work in this section shall not be construed as excluding any other work requiring naval architecture and marine engineering knowledge and application.

Sanitary Engineering (*Practices Area of Sanitary Engineering includes Environmental Engineering*)

Indicative Areas of Sanitary Engineering Practice

Practice of Sanitary Engineering. - Any person who shall practice or offer to practice sanitary engineering in the Philippines without being registered in accordance with the provisions of this Act, or any person presenting or attempting to use as his own the certificate of registration of a registered sanitary engineer, or any person who shall give any false or forged evidence of any kind to the Board, or any person who shall impersonate any registrant sanitary engineer of different name, or any person who shall attempt to use a revoked or suspended certificate of registration, or any person who shall use in connection with his name, or otherwise assume, use, or advertise any title or description tending to convey the impression that he is a sanitary engineer, without holding a valid certificate of registration, or any person who shall violate any of the provisions of this Act, shall be guilty of a misdemeanor and shall, upon conviction, be sentenced to a fine of not less than five hundred pesos nor more than two thousand pesos, or to suffer imprisonment for a period of not less than six months nor more than one year, or both, in the discretion of the court.

Scope of practice includes:

Water Supply Engineering; Waste Water Engineering, Environmental Engineering; Public Health Engineering, Industrial Hygiene Engineering; Plumbing and Fire Protection; Services in form of Consultancy, Design Engineer, Construction Manager/Engineer, Project Manager/Engineer, Pollution Control Officer, Environmental Planner, Sanitary Engineer /Public Health Engineer

C.2 SCOPE OF EDUCATION PROGRAMS

AERONAUTICAL ENGINEERING

Indicative Scope of AERONAUTICAL ENGINEERING Education Programs

1. Standard Atmosphere
2. Fluid Laws
3. Aircraft Classification and Operating Principles
4. Airplane Aerodynamics
5. Helicopter Aerodynamics
6. Wind Tunnels

AIRCRAFT STRUCTURES AND DESIGN

Fundamental Principles

Aircraft Design Configuration

Structural Loading Conditions

Structural Analysis and Design

ENGINEERING ECONOMICS

AND MANAGEMENT, LAWS AND ETHICS

Engineering Law and Ethics

Engineering Economics and Management

a. Air Transport Economics

b. Aviation Industrial Organizations

C. References:

MATHEMATICS as an indispensable tool in
Aeronautical Engineering Computations

AGRICULTURAL ENGINEERING

Indicative Scope of AGRICULTURAL ENGINEERING Education Programs

Agricultural engineering shall refer to the profession requiring the application of the fundamental and known principles of engineering to the peculiar condition and requirements of agriculture as an industry and as a field of science

1. Engineering Hydraulics and Hydrology
2. Waste Water and Waste Engineering
3. Irrigation and Drainage
4. Soil and Water Conservation
5. Renewable Energy
6. Agricultural and Rural Power and Machinery
7. Agricultural Electrification
8. Agricultural Process Engineering
9. Aquaculture Engineering
10. Structural Design and Analysis
11. Agricultural Structures

CHEMICAL ENGINEERING

Indicative Scope of CHEMICAL ENGINEERING Education Programs

Education programs normally include general inorganic, organic, analytical, and industrial chemistry, physical chemistry, applied mechanics, mathematics, engineering science, physics, economics, engineering laws and ethics and chemical engineering thermodynamics; chemical engineering calculation; physical and chemical principles, industrial waste management and control, process equipment and plant design; and biochemical engineering and bio-engineering.

CIVIL ENGINEERING and STRUCTURAL ENGINEERING

Indicative Scope of CIVIL ENGINEERING AND STRUCTURAL ENGINEERING Education Programs

Education programs in Civil Engineering normally include the following: computer programming; differential equation; probability statistics; engineering drawing; strength of materials; environmental engineering; engineering mathematics including algebra, differential and integral calculus, analytic, descriptive and solid geometry; surveying including highway and railroad surveying: plane, topographic and hydrographic surveying and earthwork; construction of highways and railroads; masonry structures, wooden and reinforced concrete buildings, towers, walls, foundations, piers, ports, wharves, aqueducts; hydraulics, hydrology, water supply systems, dikes, dams and irrigation and drainage canals, structural design and steel timber; civil engineering laws; basic mechanical engineering; construction methods and project management; soil mechanics; engineering management, engineering economy and CE project.

ELECTRICAL ENGINEERING

Indicative Scope of ELECTRICAL ENGINEERING Education Programs

Education programs normally include the ff: algebra, plane and spherical geometry, differential and integral calculus, differential equations, hydraulics, engineering drawing, engineering mechanics, engineering materials, strength of materials, basic electronics, engineering economy, electrical circuits, industrial electronics, instrumentations, electrical communication and industry, electronics, power systems, control systems, electromechanical energy conversion, electrical machines, safety engineering, electrical system design, electrical engineering laws, contracts and ethics, computer application.

ELECTRONICS AND COMMUNICATIONS ENGINEERING

Indicative Scope of ELECTRONICS AND COMMUNICATIONS ENGINEERING Education Programs

Education Programs normally includes the following:

Trigonometry, Algebra, Analytical and Solid Geometry, Differential Equations, Probability and Statistics, Complex Variables, Advance ECE Mathematics, Chemistry, Physics, Engineering Drawing, Engineering Mechanics, Engineering

Materials, Material Science, Thermodynamics, Engineering Economy, Engineering Management and Environmental Science, Electrical Circuits, Electronics, Energy Conversion, Signal Processing, Signal Spectra, Communications, Broadcast Engineering & Acoustic, Logic and Switching Theory, Microsystems and Micro Processors.

Instrumentation and Control Systems, Industrial Electronics Data Communications, Computer Systems and Computer Applications, ECE Laws Contracts, Ethics and Safety Engineering.

GEODETIC ENGINEERING

Indicative Scope of Geodetic Engineering and Geotechnical Engineering Education Programs

Education program normally include the following:

Under Mathematics: Algebra, Trigonometry, analytic and Solid Geometry, Differential Calculus, Integral Calculus, Differential Equation. Probability and Statistics. *Under the Physical Sciences,* subjects are Chemistry and Physics.

Basic Engineering subjects includes Drawing, Strength of materials, Engineering Mechanics, Elementary Electrical Engineering, Fluid Mechanics, Engineering Geology, Introduction to Environmental Engineering, Engineering Management, Engineering Economy, and Computer Fundamentals and Programming.

The Professional and Allied subjects includes Advanced Engineering Mathematics, General Surveying, Property Surveys, Engineering Surveys, Cartography, Geodetic Engineering laws, Contracts and Ethics, Public Land Laws and Laws on Natural Resources, Laws on Property, Land Registration Laws, Photogrammetry, Photo-Interpretation and Remote Sensing Geometric Geodesy, Physical Geodesy, Satellite Geodesy, Geodetic Survey, Mine surveying, Geodetic Leveling and Advance Hydrography, Geodetic Astronomy, Geodetic Computation and Adjustment, Urban Planning and Geodetic Engineering Projects.

MECHANICAL ENGINEERING

Indicative Scope of MECHANICAL ENGINEERING Education Programs

Education programs normally include the ff: algebra, planes and spherical trigonometry, solid geometry, differential and integral calculus, advance engineering mathematics, engineering drawing, basic electronics, fluid mechanics; engineering mechanics, strength of materials, machine design, mechanical engineering laboratory; fluid machinery, combustion engines; heat transfer; safety engineering; workshop, machine shop, instrumentation and control engineering; air conditioning and design, industrial plant design, vibration engineering, engineering sciences, power plant design, mechanical engineering laws, contract and ethics, plant inspection, machine shop, theory and practice, machinery, refrigeration engineering.

METALLURGICAL ENGINEERING

Indicative Scope of METALLURGICAL ENGINEERING Education Programs

Education program normally include the following: algebra, trigonometry, differential and integral calculus, engineering mathematics, chemistry, physics, engineering drawing, statics and dynamics of rigid bodies, strength of materials, fluid mechanics, basic electrical engineering, engineering economy, engineering management, computer fundamentals and programming, introduction to environmental engineering, geology, mineralogy, fuels and refractories, material science, principles of mining metallurgical analysis, metallurgical physical chemistry, mineral processing, extractive metallurgy, physical metallurgy, metallurgical plant design, law and ethics, metallurgical plant practice.

MINING ENGINEERING

Indicative Scope of Mining Engineering Education Programs

Education program normally include the following: under *Mathematics* cluster are Trigonometry, Algebra, Analytic and Solid Geometry, Differential Calculus, Integral Calculus, Differential Equations, Probability and Statistics.

The *Natural/Physical Science* subjects are General Chemistry, Analytical Chemistry (Qualitative), Physics (I, II).

While, the *Basic Engineering Science* subjects are Engineering Drawing, Engineering Mechanics, Strength of Materials, Fluid Mechanics, Fundamentals of Computer Programming, Materials Science, Elementary Electrical Engineering, Engineering Economy, Engineering Management, Introduction to Environmental Engineering.

The *Professional Courses* subjects are Principles of Mining, Underground Mining, Surface Mining, Rock Mechanics, Mine Ventilation, Mine Management and Safety, Mine Economics, Mine Plant Design, Mining Engineering Orientation, Mining Laws, Contract & Ethics, Metalliferous Ore Deposits, Mine Mill Practice, Mine Research Studies, Mineral Exploration, Mine Environmental Management, Structural Geology, Optimization Techniques, Computer Application in Mining Engineering, Soil Mechanics, Mine Materials and Handling Systems. While, the Allied Subjects are Principles of Geology, Elementary Mineralogy, Petrology, Elementary Surveying (Plane Surveying). Elective subjects are Mine Water Systems, Drilling Technology, Blasting, Coal Mining, Tunneling, Mine Power Systems.

NAVAL ARCHITECTURE AND MARINE ENGINEERING

Indicative Scope of Naval Architecture and Marine Engineering

SANITARY and ENVIRONMENTAL ENGINEERING

Indicative Scope of SANITARY and Environmental ENGINEERING Education Programs

Education program normally include the following:

The Technical Courses under *Mathematics* cluster subjects are Algebra, Trigonometry, Analytic and Solid Geometry, Differential Calculus and Integral Calculus, Differential Equations and Probability and Statistics. The *Physical and Natural Science* subject are Chemistry and Physics (1,2).

While, the *Basic Engineering Sciences* subjects are Engineering Drawing, Strength of Materials, Engineering Mechanics, Elementary Electrical Engineering, Basic Mechanical Engineering, Engineering Geology, Environmental Science, Engineering Management, Engineering Economy, Computer Fundamentals and Programming.

The Professional subjects include Environmental Sanitation, Sanitary Chemistry, Sanitary Chemistry Laboratory, Occupational Health and Safety, Water Supply Engineering, Microbiology and Parasitology, Microbiology and Parasitology Laboratory, Ecology, Environmental Engineering, Environmental Pollution, Environmental Planning, Laws and Environmental Impact Assessment, Sewerage Engineering, Sanitary Science and Plumbing as applied to Buildings, Industrial Wastewater Treatment, Water and Wastewater Treatment, Solid Waste Management, Contracts, Specifications & Ethics and Sanitary Engineering Practicum. While, the *Allied* courses are Applied Engineering Mathematics, Soil Mechanics Laboratory, Surveying, Soil Mechanics, Theory of Structures, Structural Design Concrete and Steel, Hydraulics, Construction Materials & Testing, Hydrology and Water Resources Engineering. Elective Subjects are Sanitary Engineering (1&2).

PART D – ASSESSMENT DOCUMENTATION AND REPORTS

D.1 Documents

The application should submit the following:

- ❑ Complete Application Form with certified curriculum vitae
- ❑ Records of projects undertaken such as Professional Experience
- ❑ Evidence of Continuing Professional Development
- ❑ Payment of application fee

These documents shall also include samples of the applicant's own technical outputs produced and used, before, during and after the incumbency of the program or project. All proofs and evidence shall be sworn to and notarized.

The assessment and evaluation of the documents shall be conducted by the appointed Panel of Experts who will rate and finally judge on the sufficiency or adequacy of the applicant's claims.

All claims by the applicant of responsible charge of significant engineering work shall be accompanied or supported by sworn and notarized evidence or proof, which shall be further, subjected to verification and validation by the assessment and/or evaluation panel. These evidences or proofs must specify clearly individual engineering program or project, dates of engagement, costs, complexity, and clienteles or beneficiaries served.

D.2 REPORTS

The assessment and evaluation of the documents shall be conducted by the appointed Panel of Experts who will rate and finally judge on the sufficiency or adequacy of the applicant's claims.

The Panel of Experts shall submit an assessment report and their recommendations to the AERP National Monitoring Committee.

PART E – TERMINOLOGY

- 1) **RECOGNITION OF HIGHER ENGINEERING DEGREE** – The Commission on Higher Education is responsible for processing permit and recognition for all higher education programs leading to Baccalaureate, Masters and Doctoral Degrees. The applicant school, public and private submits to CHED its application for government permit or recognition within the prescribed deadline of submission. The CHED conducts document analysis of application to determine their extent of compliance to existing minimum standards for the program. Based on the submitted forms, an ocular inspection of the school shall be scheduled and conducted by the Regional Quality Assessment Team (RQAT). RQAT submits the inspection report to the CHED Director for endorsement to the Commission en Banc. If approved, the certificate of government authority is granted.
 - 1.1 **Basis for Recognition** – Each engineering school shall provide evidence that they will be able to produce graduates with the necessary theoretical knowledge and practical skills required of professional engineers. The basis for recognition in terms of academic standards, personal qualifications, staff development, facilities, laboratory instructions, engineering library, audio-visual facilities, curriculum, services and publications are contained in the Policies and Guidelines in Engineering Education found in Reference 1.
- 2) **ACCREDITATION OF HIGHER EDUCATION PROGRAMS** – For the purpose of progressive deregulation, and the grant of benefits, educational institutions/programs, subject their programs and institutions for voluntary accreditation. Institutions based on their merits are granted the following classifications.
 - 2.1 Candidate status-for programs which have undergone a preliminary survey visit and are certified by the federation/network as being capable of acquiring accredited status within two years;
 - 2.2 Level I accredited status- for programs which have been granted initial accreditation after a formal survey by the accrediting agency and duly certified by the accreditation federation/network, effective for a period of three years
 - 2.3 Level II re-accredited status- for programs which have been re-accredited by the accrediting agency and duly certified by the accreditation federation/network, effective for a period of three or five years based on the appraisal of the accrediting agency
 - 2.4 Level III re-accredited status-for programs which have been re-accredited and have met the additional criteria/guidelines set by the federation/network for this level

2.5 Level IV accredited status-accredited programs which are highly respected as very high quality academic programs in the Philippines and with prestige and authority comparable to similar programs in excellent foreign universities