Civil Engineering

Introduction

Civil Engineering is a profession in which knowledge of mathematics and physical sciences are applied ranging from providing structures for the use of civilization to creating, improving, and protecting the environment, as well as providing facilities for transportation and industries. Civil engineers are involved with the planning, design, construction and operation of complex systems such as buildings and bridges, water purification and distribution systems, flood protection, highways, rapid transit and rail systems, harbors, airports, tunnels and underground construction, dams, and power generators. Civil engineers are also involved in city planning, water, air, and land remediation, as well as hazardous wastes and chemicals disposal.

Civil Engineering Program at BINA NUSANTARA UNIVERSITY offers comprehensive programs leading to a bachelor degree in Civil Engineering.

Vision

The foremost Civil Engineering Department that is in continuous pursuit of innovation and enterprise is adaptable to global changes.

Mission

The mission of Civil Engineering Department is to contribute to the global community through the provision of world-class education by :

1. Educating students on sustainable infrastructure by providing knowledge in Civil Engineering and related disciplines, and to prepare them for their career advanced degrees.
2. Providing a solid learning and research experience that nurtures leaders with creative and value-adding talents for the global community.
3. Conducting professional services and improve the quality of life of Indonesians and the international community.

Program Objective

The objectives of the program are :

1. To provide students with Civil Engineering knowledge in Structural, Geotechnical, Highway and Transportation, Water Resources, and Construction Management for their Civil Engineering careers, combined with environmental friendly knowledge for a sustainable future.
2. To prepare graduates with necessary knowledge and skills in teamwork, problem solving, professional & ethical responsibility, and communication for successful careers.
3. To provide graduates with a broad education of contemporary issues and skills in civil engineering as a foundation for their professional careers and commitment to life-long learning.

Graduate Competency

At the end of the program, graduates will have these following competencies :

1. An ability to apply a knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, components, or process to meet desired needs.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively
8. To understand the impact of engineering solutions in a global, economic, environmental, and societal context
9. A recognition of the need for, and an ability to engage in life-long learning
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Prospective Career of the Graduates

Graduates of the Civil Engineering Program at BINA NUSANTARA UNIVERSITY would be able to apply their knowledge and interpersonal skills in careers, both in private and public sectors, to conceive, plan, design, implement, operate and maintain the systems needed to support the physical infrastructure. BINA NUSANTARA UNIVERSITY is committed to provide its undergraduate program with excellent academic preparation and interpersonal skills for direct entry in the profession, or post graduate education.

Graduates will be able to pursue a variety of career options in worldwide locations due to demands for improvements to civil infrastructure that are ever-present, because of population growth and deterioration of existing systems over time. Several career options include, but not limited to, the following:

1. Structural Engineering: Project Civil Engineer, Precast Project Engineer, Civil Designer, Offshore Structure Engineer, Airfield Civil Engineer.
2. Hydrological and Environmental Engineering: Flood Mapping Services Manager, Water Resources Project Manager, Storm Water Management Engineer, Senior Municipal Engineer, Drainage Engineer.
3. Transportation and Traffic Engineering: Transportation Project Manager, Transportation Design Manager, Traffic Engineer.
4. Geotechnical Engineering: Geotechnical Engineering Manager, Reclamation Engineer, Soil Improvement Engineer.
5. Highway Engineering: Bridge Engineer, Highway Design Project Manager, Highway Project Engineer, Highway Construction Inspector.
6. Construction Management: Senior Project Manager, Lean/Process Engineer, Construction QC Manager.
7. Information System in Civil Engineering: GIS Analyst Technician, Modeling Engineer.

Curriculum

Civil Engineering Program at BINA NUSANTARA UNIVERSITY utilizes information technology as an integral part of the teaching and learning processes, particularly through MCL (Multi Channel Learning) using two delivery methods: Face to Face (F2F) in classrooms and Guided Self Learning Class (GSLC), which allow students to further their studies independently through all sources, whether from online reading or textbook. The Civil Engineering Program provides an integrated educational experience that combines theories with practical experience in laboratory experimentations, problems solving and engineering designs, as well as site visits.

The curriculum in the Civil Engineering Program provides students with a solid foundation in science, with introductory courses in all of the Civil Engineering technical areas. During their final year, students choose one of the following Civil Engineering emphasis areas:

1. Structural Engineering
2. Hydrological and Environmental Engineering
3. Transportation and Traffic Engineering
4. Geotechnical Engineering
5. Highway Engineering
6. Construction Management
7. Information System in Civil Engineering

As seniors, students receive an even more intense design experience, learning about alternative solution, feasibility, economics, and detailed design descriptions. The students also received additional knowledge from our Guest Lecturer in one subject (Case Study in Civil Engineering), which make use of English media (Lecturer Presentation, handbook, homework, and exams). They also receive General Lecture from national and international professionals (members of Associations, Industries, or Constructions). Students are also required to take courses in professionalism and engineering ethics. These courses will culminate in major engineering design experiences to bridge the gap between educational and professional practice.

Course Structure

Sem	Code	Course Name	SCU	Total
1	CB412	CB: Self Development	2	20
	K0024	Calculus I	4	
	D0684	Physics I	4	
	S1096	Building Construction	4/2	
	S0012	Introduction to Civil Engineering	2	
	G1372	English Entrant	2	
2	CB422	CB: Spiritual Development	2	20
	K0594	Calculus II	4	
	K0923	Physics II	2/1	
	S0372	Chemistry for Civil Engineering	2	
	G1382	English in Focus	2	
	S1072	Algorithm & Programming	2	
	S0695	Statics	4/1	

Sem	Code	Course Name	SCU	Total
3	I0685	Statistical Method	4/1	20
	K0104	Engineering Mathematics I	4	
	S0663	Surveying	2/1	
	S0262	Numerical Analysis	2	
	S1014	Mechanics of Materials	4	
	G1392	English Savvy	2	
4	CB432	CB: Interpersonal Development	2	22
	K0124	Engineering Mathematics II	4	
	S1114	Structural Analysis	4	
	S0705	Soil Mechanics	4/1	
	S0715	Fluid Mechanics & Hydraulics	4/1	
	EN001	Entrepreneurship I	2	
5	CB442	CB: Professional Development	2	19
	S0782	Environmental Engineering	2	
	S1183	Construction Material Technology*	2/1	
	S0484	Foundation Engineering	4	
	S0844	Theory and Design of Steel Structures	4	
	S1122	Traffic Engineering	2	
	S0622	Construction Management	2	
6	S0753	Highway Engineering	2/1	21
	S0802	Estimating Cost	2	
	S0834	Theory and Design of Concrete Structures	4	
	S1032	Computer Application in Structural Engineering	2	
	S0732	Hydrology	2	
	EN002	Entrepreneurship II	2	
	Elective Courses I**			
	S0522	Geosyntetics Application in Civil Engineering	2	
	S0892	Soil Improvement Method	2	
	S0862	Airport Engineering	2	
	S0972	Evaluation of Project Management & Project Feasibility	2	
	S0512	Steel Structures Design for Advanced	2	
	S1132	Dynamics of Structures	2	
	S1142	Bridge Engineering	2	
	S0442	Construction Method	2	

Sem	Code	Course Name	SCU	Total
7	S1042	Computer Application in Geotechnical Engineering	2	18
	S0182	Case Study in Civil Engineering	2	
	S0202	Internship	2	
	S0252	Seminar	2	
	S1152	Project*	2	
	S0192	Research Methodology and Technical Writing	2	
	Elective Courses**			
	S1102	Advanced Soil Mechanics	2	
	S0432	Urban Drainage	2	
	S0902	Infrastructure Management	2	
	S1162	Computer Application in Construction Management	2	
	S0502	Concrete Structures Design for Advanced	2	
	S1172	Earthquake Engineering	2	
	S0882	Railway Engineering	2	
	S0412	Earthwork / Heavy Equipment	2	
8	S0216	Thesis	6	6
	Elective Courses			
	G1402	English for Business Presentation	2	
	G1412	English for Written Business Communication	2	
TOTAL CREDIT 146				

*) Entrepreneurship Embedded

**) Student has to choose Elective Courses I (on 6th semester) and Elective Courses II (on 7th semester) 6 credits for each semester.

The Table of Prerequisite for Civil Engineering (S1)

Subject		Credits	Prerequisites		Credits
K0104	Engineering Mathematics I	4	K0024	Calculus I	4
S1114	Structural Analysis	4	S0695	Statics	4/1

Student should pass all of these quality controlled examinations as listed below:

No	Code	Course Name	Minimum Grade
1	CB412	CB : Self Development	B
2	EN002	Entrepreneurship 2	C
3	S0695	Statics*	C
4	S0705	Soil Mechanics*	C
5	S0715	Fluid Mechanics & Hydraulics	C
6	S0484	Foundation Engineering	C
7	S0622	Construction Management	C
8	S0753	Highway Engineering*	C

*) Tutorial & Multipaper