

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	CHAR6013	Character Building: Pancasila	2	20	
	MATH6014	Calculus I	4		
	SCIE6004	Physics I	4		
	CIVL6051	Building Construction	4/2		
	CIVL6001	Introduction to Civil Engineering	2		
	English University Courses I				
	ENGL6128	English in Focus	2		
	ENGL6130	English for Business Presentation	2		
2	CHAR6014	Character Building: Kewarganegaraan	2	20	
	MATH6046	Calculus II	4		
	SCIE6013	Physics II	2/1		
	SCIE6014	Chemistry for Civil Engineering	2		
	CIVL6021	Statics	4/1		
	COMP6045	Algorithm & Programming	2		
	English University Courses II				
	ENGL6129	English Savvy	2		
ENGL6131	English for Written Business Communication	2			
3	STAT6062	Statistical Method	4/1	20	
	MATH6022	Engineering Mathematics I	4		
	CIVL6019	Surveying	2/1		
	MATH6072	Numerical Analysis	2		
	CIVL6047	Mechanics of Materials	4		
	CHAR6015	Character Building: Agama	2		
4	MATH6024	Engineering Mathematics II	4	22	
	CIVL6053	Structural Analysis	4		
	CIVL6022	Soil Mechanics	4/1		
	CIVL6023	Fluid Mechanics & Hydraulics	4/1		
	ENTR6003	Entrepreneurship I	2		
	CIVL6010	Construction Methods	2		
5	CIVL6030	Environmental Engineering	2	19	
	CIVL6066	Construction Material Technology*	2/1		
	CIVL6003	Research Methodology and Technical Writing	2		
	CIVL6054	Traffic Engineering	2		
	CIVL6012	Foundation Engineering	4		
	CIVL6034	Theory and Design of Steel Structures	4		
	CIVL6017	Construction Management	2		

Sem	Code	Course Name	SCU	Total	
6	CIVL6025	Hydrology	2	21	
	CIVL6027	Highway Engineering	2/1		
	FINC6037	Estimating Cost	2		
	CIVL6033	Theory and Design of Concrete Structures	4		
	COMP6043	Computer Applications in Structural Engineering	2		
	ENTR6004	Entrepreneurship II	2		
	Elective Courses I**				
	CIVL6015	Geosyntetics Application in Civil Engineering	2		
	CIVL8038	Soil Improvement Method	2		
	CIVL6035	Airport Engineering	2		
	CIVL6043	Evaluation of Project Management & Project Feasibility	2		
	CIVL6014	Steel Structures Design for Advanced	2		
	CIVL8055	Dynamic of Structures	2		
	CIVL8056	Bridge Engineering	2		
7	COMP6044	Computer Applications in Geotechnical Engineering	2	18	
	CIVL6002	Case Study in Civil Engineering	2		
	CIVL6004	Internship	2		
	CIVL6006	Seminar	2		
	CIVL6057	Project*	2		
	CIVL6086	Engineering Geology	2		
	Elective Courses II**				
	CIVL8052	Advanced Soil Mechanics	2		
	CIVL6009	Urban Drainage	2		
	CIVL6039	Infrastructure Management	2		
	COMP6046	Computer Applications in Construction Management	2		
	CIVL6013	Concrete Structures Design for Advanced	2		
	CIVL6058	Earthquake Engineering	2		
	CIVL6037	Railway Engineering	2		
CIVL6008	Earthwork / Heavy Equipment	2			
8	CIVL6005	Thesis	6	6	
TOTAL CREDIT 146 SCU					

*) *Entrepreneurship Embedded*

**) *Elective Courses: Student has to choose minimum 6 Credits (on 6th semester and 7th semester)*

English University Courses:

-) *For English University Courses I, student with score Binus University English Proficiency Test less than 500 will take English in Focus, and student with score test greater than or equal to 500 will take English for Business Presentation*

-) *For English University Courses II, student with score Binus University English Proficiency Test less than 500 will take English Savvy, and student with score test greater than or equal to 500 will take English for Written Business Communication*

The Table of Prerequisite for Civil Engineering (S1)

Subject	Credits	Prerequisites	Credits		
MATH6022	Engineering Mathematics I	4	MATH6014	Calculus I	4
CIVL6053	Structural Analysis	4	CIVL6021	Statics	4/1

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

No	Code	Course Name	Minimum Grade
1	CHAR6013	Character Building: Pancasila	B
2	ENTR6004	Entrepreneurship II	C
3	CIVL6021	Statics*	C
4	CIVL6022	Soil Mechanics*	C
5	CIVL6023	Fluid Mechanics & Hydraulics	C
6	CIVL6012	Foundation Engineering	C
7	CIVL6017	Construction Management	C
8	CIVL6027	Highway Engineering*	C

*) Tutorial & Multipaper