MINISTRY OF EDUCATION AND TRAINING
NAM CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIET NAM
Independence – Freedom - Happiness

UNDERGRADUATE PROGRAM

(Issued together with Decision No. /QĐ-ĐHNCT dated / /2025 of The Rector of Nam Can Tho University)

Name of program: **Transportation Engineering**

Level: **Undergraduate**

Major: **Transportation Engineering**

Code: **7580205**

Type of education: **Full-time**

1. Program description

1.1. Introduction to the program

The Transportation Engineering program, under the Department of Civil Engineering, Faculty of Architecture, Construction, and Environment at Nam Can Tho University, was established in 2024. Enrollment for the academic year 2024–2025.

1.2. General information about the program

Name of program in Vietnamese	Kỹ thuật xây dựng Công trình giao thông
Name of program in English	Transportation Engineering
Program code	7580201
Degree-granting institution	7580205
Degree	Transportation Engineering Bachelor
Level	Undergraduate
The number of required credits	152
Type of education	4.5 years
Program duration	Full-time
Eligible candidates for admission	High school graduates
Grading scale	4
Graduation requirements	- Accumulate all required courses and credits (152 credits). - Achieve a cumulative GPA of at least 5.0. - Meet the university's English and IT proficiency standards. - Meet soft skills and professional skills standards.

	- Obtain the National Defense and Security Education certificate and complete prerequisite courses.
Job opportunities	- Staff at management boards of departments, district/commune People's Committees, infrastructure economics offices, etc. - Design staff at architectural institutes, construction departments, transportation departments, etc. - Technical or supervisory staff at enterprises and organizations related to transportation engineering. - Researchers in transportation engineering research institutes. - Lecturers at universities, colleges, or vocational schools in the field of transportation engineering.
Postgraduate study options	Eligible to pursue master's degrees domestically or internationally.
Reference program	Transportation Engineering programs at Can Tho University, Can Tho University of Technology, Ho Chi Minh City University of Technology, and Ho Chi Minh City University of Architecture.
Update time	……/2025

1.3. Program goals

1.3.1. General goals

PO: To train transportation engineering graduates with strong political and ethical qualities, good health, and the knowledge and skills to meet industry demands, including surveying and designing transportation projects, urban planning, technical consultation and evaluation, construction organization and supervision, and management of transportation infrastructure operations.

1.3.2. Specific goals

- **PO1:** Equip students with foundational and specialized knowledge in transportation engineering to design, construct, inspect, and manage transportation, industrial, and technical infrastructure projects.
- **PO2:** Develop skills in effectively using software, digital technologies, and modern tools for design, simulation, monitoring, and transportation management.

- **PO3:** Foster critical thinking, problem-solving, teamwork, communication, and decision-making skills in diverse and practical technical environments.
- **PO4:** Cultivate professional ethics, civic responsibility, legal compliance, and commitment to environmental protection, occupational safety, and sustainable transportation development.
- **PO5:** Develop lifelong learning, self-research, and adaptability to new technologies and changes in the labor market and scientific advancements domestically and internationally.

1.4. Student learning outcomes

a. Knowledge

- **SO1:** Apply basic knowledge of mathematics, science, and engineering in transportation engineering to solve technical problems such as structural mechanics, soil mechanics, hydraulics, and material strength.
- **SO2:** Apply specialized knowledge to design and construct transportation projects and implement structural design methods, construction techniques, site organization, and technical measures.
- **SO3:** Understand and apply knowledge of legal, economic, and environmental aspects in transportation engineering activities.

b. Skills

- **SO4:** Proficiently use industry-specific technologies and software for design and simulation, such as AutoCAD, Midas, road design software, and geotechnical software (e.g., Plaxis, GeoStudio).
- **SO5:** Demonstrate communication, teamwork, and leadership skills in technical environments.
- **SO6:** Analyze and synthesize technical information to identify and propose feasible technical solutions tailored to practical requirements and project conditions.
- **SO7:** Organize, plan, and manage construction schedules, materials, labor, and equipment efficiently for transportation projects.

c. Capacity for autonomy and responsibility

- **SO8:** Demonstrate professional responsibility, ethics, and legal compliance in construction activities.
- **SO9:** Exhibit lifelong learning capabilities to enhance expertise and adapt to changes in the work environment.

1.5 Teaching and learning methods/strategies and assessment methods

1.5.1. Teaching and learning methods/strategies

The teaching methods are presented in the table below

Methods and form of teaching	Purpose
Presentation	Deliver systematic, coherent, and logical knowledge to help students grasp fundamental and key content.
Discussion	Develop critical thinking, communication, and teamwork skills
Assignment	Reinforce and apply learned knowledge while practicing problem-solving skills.
Self-study, reading of reference materials	Foster self-learning, in-depth exploration, and broaden knowledge beyond lectures.

1.5.2. Grading scale, form, assessment criteria, and weight of scores

No.	Form	%	Assessment criteria	Maximum score
1	Attendance	10	Lesson preparation and participation; mandatory attendance.	10
2	Indididual assignment	15	Quality of submitted work	10
3	Progress assessment	15	Based on instructor's answer key and grading scale.	10
4	Final exam	60	Based on instructor's answer key and grading scale.	10

2. Program duration*:*

3. Required total credits

Required total credits: 152 credits (excluding the Physical Education and Defense and security education courses), distributed as follows:

No.	Knowledge	Credits	
		Obligatory knowledge	Elective knowledge
I	Mathematics and Natural Sciences	12	-
II	General Knowledge	31	-
III	Supplementary Knowledge	4	-
IV	Technical and Disciplinary Foundations	30	-
V	Projects, Internships, and Graduation Project	30	
VI	Specialization	37	8
	Total:	**144**	**8**

4. Eligible candidates for admission

Admission is based on national high school exam results or high school academic records, evaluated according to the subject combinations for the program, with nationwide recruitment.

5. Curriculum, graduation requirements

5.1. Curriculum

Follows the credit-based training regulations for full-time university and college programs at Nam Can Tho University.

5.2. Graduation requirements

- Complete the training program and meet graduation requirements as per Article 27 of the credit-based training regulations.
- Achieve English and IT proficiency as per university standards (IT proficiency from Module 01 to 06 per Circular 03/2014/TT-BTTTT).
- Obtain certificates in National Defense and Security Education, Physical Education, Soft Skills, and Professional Skills.
- Course and module evaluations follow Articles 22 and 23 of the credit-based training regulations.
- Academic year and graduation rankings follow Articles 14 and 28 of the credit-based training regulations.

6. Program structure

No.	Course code	Course name	Number of credits				
			Theory	Practice/Lab	Discussion	Project	Total
I. Mathematics - Information Technology - Natural Sciences			**12**	**0**	**0**	**0**	**12**
1		Calculus 1	3	0	0	0	3
2		Physics 1+2	3	0	0	0	3
3		Probability and Statistics	2	0	0	0	2
4		Linear Algebra	2	0	0	0	2
5		Applied Mathematics	2	0	0	0	2
II. General Knowledge			**33**	**13**	**0**	**0**	**31**
6		Introduction to the Discipline	1	0	0	0	1
7		Descriptive Geometry –	3	0	0	0	3

		Technical Drawing					
8		Basic Informatics	2	1	0	0	3
9		Environment	2	0	0	0	2
10		Basic English 1	3	0	0	0	3
11		Basic English 2	3	0	0	0	3
12		Basic English 3	3	0	0	0	3
13		Marxist-Leninist Philosophy	3	0	0	0	3
14		Political Economy	2	2	0	0	2
15		Scientific Socialism	2	2	0	0	2
16		Ho Chi Minh Ideology	2	0	0	0	2
17		History of the Communist Party of Vietnam	2	0	0	0	2
18		General Law	2	0	0	0	2
19		National Defense and Security Education*	3	5	0	0	8
20		Physical Education 1*	0	1	0	0	1
21		Physical Education 2*	0	1	0	0	1
22		Physical Education 3*	0	1	0	0	1
III. Supplementary Knowledge			**4**	**0**	**0**	**0**	**4**
23		Entrepreneurship	2	0	0	0	2
24		Scientific Research Methods	2	0	0		2
IV. Fundamental knowledge			**27**	**2**	**1**	**0**	**30**
25		Theoretical Mechanics	2	0	0	0	2
26		Steel Structures 1	2	0	0	0	2
27		Strength of Materials	3	0	0	0	3
28		Basic Hydraulics	2	0	0	0	2

29		Engineering Geology	1	0	1	0	2
30		Construction Machinery	2	0	0	0	2
31		Soil Mechanics	2	0	0	0	2
32		Soil Mechanics Lab	0	1	0	0	1
33		Structural Mechanics 1	3	0	0	0	3
34		Construction Materials	2	0	0	0	2
35		Construction Materials Lab	0	1	0	0	1
36		Structural Mechanics 2	2	0	0	0	2
37		Foundations	3	0	0	0	3
38		Reinforced Concrete Structures	3	0	0	0	3
V. Projects, Internships, and Graduation Project			**0**	**0**	**9**	**21**	**30**
39		Reinforced Concrete Structures Project 1	0	0	0	1	1
40		Foundations Project	0	0	0	1	1
41		Bridge Pier and Abutment Design Project	0	0	0	1	1
42		Reinforced Concrete Bridge Construction Project	0	0	0	1	1
43		Steel Bridge Construction Project	0	0	0	1	1
44		Reinforced Concrete Bridge Design Project	0	0	0	1	1
45		Steel Bridge Design Project	0	0	0	1	1
46		Highway Geometric Design Project	0	0	0	1	1

47		Highway Pavement Design Project	0	0	0	1	1
48		Highway Subgrade Construction Project	0	0	0	1	1
49		Highway Pavement Construction Project	0	0	0	1	1
50		Orientation Internship	0	0	1	0	1
51		Surveying Internship	0	0	1	0	1
52		Worker Internship	0	0	2	0	2
53		Graduation Internship	0	0	5	0	5
54		Graduation Project	0	0	0	10	10
VIa. Mandatory Specialization Knowledge			**34**	**3**	**0**	**0**	**37**
55		Surveying	2	0	0	0	2
56		Bridge and Road Hydrology	2	0	0	0	2
57		Reinforced Concrete Bridge Design	2	0	0	0	2
58		Bridge Piers and Abutments	2	0	0	0	2
59		Steel Bridge Design	2	0	0	0	2
60		Construction Cost Estimation	2	1	0	0	3
61		Reinforced Concrete Bridge Construction	3	0	0	0	3
62		Steel Bridge Construction	2	0	0	0	2
63		Highway Geometric Design and Survey	3	0	0	0	3
64		Highway Pavement Design	2	0	0	0	2

65		Highway Subgrade Construction	2	0	0	0	2
66		Highway Pavement Construction	2	0	0	0	2
67		Transportation Project Management	2	0	0	0	2
68		Construction English	2	0	0	0	2
69		Applied Informatics in Transportation Engineering	1	1	0	0	2
70		Construction Economics	2	0	0	0	2
71		Computer-Aided Construction Drawing (AutoCAD)	1	1	0	0	2
VIb. Elective course of specialized knowledge (Minimum 8 credits in Road or Bridge Specialization)			**14**	**2**	**0**	**0**	**16**
72		Highway Operation and Testing	2	0	0	0	2
73		Highway Operation and Testing Internship	0	1	0	0	1
74		Urban Transportation and City Road Design	2	0	0	0	2
75		Bridge Operation and Testing	2	0	0	0	2
76		Bridge Specialization	2	0	0	0	2
77		Bridge Operation and Testing Internship	0	1	0	0	1
78		Culvert Design and	2	0	0	0	2

		Construction on Highways					
79		Highway Subgrade on Weak Soil	2	0	0	0	2
80		Bridge and Road Aesthetics	2	0	0	0	2

7. Guidelines for Program Implementation

7.1 Faculties and departments

- The Faculty managing the program is responsible for reviewing and compiling detailed syllabi for foundational, disciplinary, and specialized courses in line with the program's credit requirements. Provide a list of textbooks, lecture materials, and references for all courses to the university library and faculty office. Coordinate with university units each semester to implement the training plan on schedule.

- Assign lecturers with at least a master's degree (in the same or related field) to teach theoretical courses and provide detailed syllabi to ensure alignment with the university's teaching plan.

- Academic advisors must thoroughly understand the credit-based training program to guide students in course registration.

7.2 Lecturers

- Lecturers assigned to teach one or more courses must carefully study the detailed course syllabi to prepare lectures and appropriate teaching aids.

- Prepare comprehensive lecture materials, textbooks, and resources for students to review before class.

- Organize seminars, emphasize group work, and guide students in writing essays and projects. Determine teaching methods, including in-class lectures, discussions, problem-solving, and guidance in practical sessions, labs, and report writing.

- Focus on fostering students' self-learning and research skills during teaching and practical guidance.

- Ensure logical delivery and comprehension of knowledge blocks, enforce prerequisite course requirements, and prepare to teach elective courses.

7.3 Students

- Consult academic advisors to select courses aligned with the study plan. Study materials in advance to better absorb lectures. Attend classes fully to follow instructors' guidance. Be proactive in self-learning, research, and group study, and participate fully in seminars.

- Actively utilize online resources and the university library for self-study, research,

and graduation projects. Strictly adhere to exam and assessment regulations.

- Regularly participate in extracurricular activities to develop communication skills and social understanding.

7.4 Facilities and equipment for teaching, practice, and internships

- Theory classrooms equipped with traditional tools and additional teaching aids (e.g., projectors).

- Computer labs with software installed for basic informatics training.

- Labs for fundamental physics and chemistry courses with equipment for hands-on training.

- Specialized labs equipped with machinery, tools, and devices tailored to each course.

RECTOR	DEPARTMENT OF ACADEMIC AFFAIRS	FACULTY