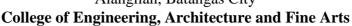
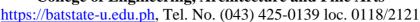


# Republic of the Philippines **BATANGAS STATE UNIVERSITY**

## **BatStateU Alangilan** Alangilan, Batangas City







#### **CURRICULUM**

#### **Master of Science in Transportation Engineering (MSTE)**

Academic Year 2021-2022

Reference CMOs: 15 Series of 2019: Policies, Standards and Guidelines for Graduate Programs

#### **Curriculum Description**

With increasing demand for mobility and rapid urbanization, the transportation system binds a region's physical, economic and social structure. The Master of Science in Transportation Engineering program provides a strong foundation in traffic engineering, transportation planning, transportation economics, public transportation systems and intelligent transportation systems. This program is based on the premise that a common set of analytical approaches and methodologies can be applied to solve a range of transportation challenges. Students must complete a program of coursework, plus a research-based master's thesis on a topic of their choosing approved by their thesis supervisor. Coursework includes required core courses, specialization courses and research courses.

### **Program Educational Objectives of Transportation Engineering (PEO)**

The MS Transportation Engineering alumni three to five years after graduation shall:

- 1. **Specialist.** Practiced as a high-level in solving complex transportation engineering problems leading to improvements and innovations, while taking into consideration the environmental, social, and economical requirements.
- 2. **Professionalism and Leadership.** Assumed leadership position in industry, academe, government, or private sector with consideration to social and ethical responsibility.
- 3. **Lifelong Learning.** Engaged in lifelong learning through further studies, research, certifications, promotions, and other personal and professional development activities.

#### **Institutional Graduate Attributes (IGA)**

The student should achieve at least 75% for each IGA upon graduation

- 1. **Knowledge Competence.** Demonstrate a mastery of the fundamental knowledge and skills required for functioning effectively as a professional in the discipline, and an ability to integrate and apply them effectively to practice in the workplace.
- 2. **Creativity and Innovation.** Experiment with new approaches, challenge existing knowledge boundaries and design novel solutions to solve problems.
- 3. **Critical and Systems Thinking.** Identify, define, and deal with complex problems pertinent to the future professional practice or daily life through logical, analytical and critical thinking.

- 4. **Communication.** Communicate effectively (both orally and in writing) with a wide range of audiences, across a range of professional and personal contexts, in English and Pilipino.
- 5. **Lifelong Learning.** Identify own learning needs for professional or personal development; demonstrate an eagerness to take up opportunities for learning new things as well as the ability to learn effectively on their own.
- 6. **Leadership, teamwork, and Interpersonal Skills.** Function effectively both as a leader and as a member of a team; motivate and lead a team to work towards goal; work collaboratively with other team members; as well as connect and interact socially and effectively with diverse culture.
- 7. **Global Outlook.** Demonstrate an awareness and understanding of global issues and willingness to work, interact effectively and show sensitivity to cultural diversity.
- 8. **Social and National Responsibility.** Demonstrate an awareness of their social and national responsibility; engage in activities that contribute to the betterment of the society; and behave ethically and responsibly in social, professional and work environments.

#### **Students Outcomes**

The following skills, knowledge, and behaviors are expected to be attained by the students as they progress through the program:

- 1. **Knowledge Competence.** Demonstrate a comprehensive and broad understanding of transportation engineering principles and apply advanced knowledge in the specific engineering discipline;
- 2. **Critical and System Thinking.** Analyze, synthesize, create and evaluate the challenges in transportation engineering practice;
- 3. **Design and Analysis.** Design components, devices, and systems to meet specified engineering needs under real–world constraints;
- 4. **Communication.** Communicate effectively the technical knowledge, both orally and in writing, on complex transportation engineering activities;
- 5. **Leadership and Teamwork.** Function effectively as an individual, a team member, or as a leader in diverse work environments;
- 6. **Creativity and Innovation.** Contribute to the generation, dissemination and preservation of knowledge, methodologies, techniques, and processes;
- 7. **Lifelong Learning.** Engage in continuous professional development and lifelong learning endeavors;
- 8. **Ethics and Professionalism.** Conduct oneself within professional and ethical standards; and
- 9. **Research.** Perform independent scientific research that results in innovation with application.

## **CURRICULUM COMPONENTS**

A. CORE COURSES (9 units)		
<b>Course Code</b>	Course Title	Credit Unit
ENGG 501	Computational Mathematics 1	3
ENGG 502	Computational Mathematics 2	3
MSRM 501	Research Methodology	3
<b>B. SPECIALIZATION COURSES (9 units)</b>		
<b>Course Code</b>	Course Title	Credit Unit
MSTE 501	Traffic Flow Theory and Analysis	3
MSTE 502	Transportation Systems Analysis and Planning	3
MSTE 504	Planning and Design of Transportation Facilities	3
C. THESIS COURSES (6 units)		
<b>Course Code</b>	Course Title	Credit Unit
MSTE 522	Thesis I: Thesis Proposal	3
MSTE 523	Thesis II: Thesis Presentation	3
D. ELECTIVE COURSES (6 units)		
<b>Course Code</b>	Course Title	Credit Unit
MSTEE 501	Transportation Economics and Evaluation	3
MSTEE 502	Pavement Systems Engineering	3
MSTEE 503	Airport Engineering	3
MSTEE 504	Ports and Harbor Engineering	3
MSTEE 505	Railway Engineering	3
MSTEE 506	Bridge Engineering	3
MSTEE 507	Special Topics	3