Republic of the Philippines
BATANGAS STATE UNIVERSITY
BatStateU Alangilan
Alangilan, Batangas City
College of Engineering, Architecture and Fine Arts
https://batstate-u.edu.ph, Tel. No. (043) 425-0139 loc. 0118/2121

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)		
Course Code	**Course Title**	**Credit Unit**
ENGG 501	Computational Mathematics 1	3
ENGG 502	Computational Mathematics 2	3
MSRM 501	Research Methodology	3
B. SPECIALIZATION COURSES (9 units)		
Course Code	**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)		
Course Code	**Course Title**	**Credit Unit**
MSTE 522	Thesis I: Thesis Proposal	3
MSTE 523	Thesis II: Thesis Presentation	3
D. ELECTIVE COURSES (6 units)		
Course Code	**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