

Research

Essential Elements of a
Productive STEM
Infrastructure from the
perspective and experience of
Universidad Metropolitana

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Teaching

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Universidad Metropolitana

- Part of Ana G. Méndez University System (AGMUS)
 - Universidad Metropolitana
 - Universidad del Este
 - Universidad del Turabo

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Universidad Metropolitana

- Small private institution
- Located in the urban area of San Juan, Puerto Rico
- Approximately 14,000 students
 - 99% hispanic
 - 65% female
- School of Science and Technology serves to around 700 students.

Universidad Metropolitana

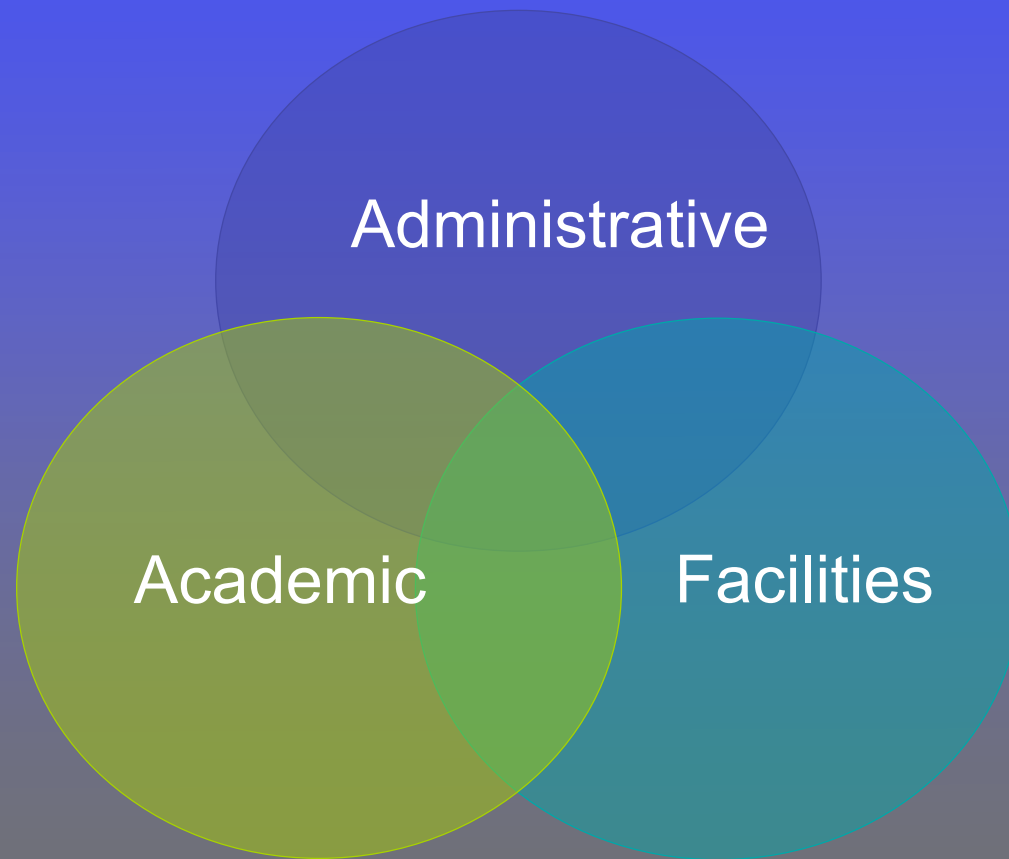
- Mission
 - To provide students with an academic environment of freedom and intellectual challenge that allow them to develop ethical and cultural values.
- Vision
 - To be recognize as a leader institution in undergraduate research in Puerto Rico

Development of research at UMET

- NSF MIE award (1996–2006)
 - Increased the opportunity to do research and improved research facilities at the institution.
 - Expand the academic offer
 - Recruitment of research oriented faculty.

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Essential Elements for STEM Program Development



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Planning the program

- Set short and long term goals
- Delineate a plan that consider
 - existing facilities
 - student needs
 - starting budget
 - expected outcomes

These steps should be the result of the collaborative effort of administration and faculty

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Administrative Infrastructure

- It is necessary to obtain a synchronized effort from the administration
 - Support changes in courses and programs
 - Support the initiative of the faculty to establish the research projects at the institution including:
 - seed money for junior faculty
 - release time for writing proposals and papers
 - Provide training workshops on research, research in the classroom, proposal writing, assessment, etc.
- Centralized operations of support programs for faculty and students

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Academic infrastructure

- Teaching oriented faculty
 - Well prepared on their areas
 - Attend provided workshops
 - Open to incorporate changes to improve their courses.

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Academic infrastructure

- Research oriented faculty
 - Initiative in proposal writing
 - Establish projects that incorporate effectively the existing facilities and the students
 - Establish collaborations with experienced colleagues in other institutions

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Academic Infrastructure

- Students
 - Tools to improve their writing, speaking and reading in English.
 - Offering courses oriented in the development of research skills
 - Research in the classroom
 - Well oriented and evaluated before starting research projects

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Facilities or physical infrastructure

Physical and Laboratory Equipment

- Identify or build adequate space for teaching and research laboratories.
 - Provide the environmental conditions suitable to perform the expected work

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Laboratory Equipment

- Commitment from the administration in the acquisition and maintenance of the laboratory equipment.

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Integration of research projects and teaching experience for students in a well structure administrative support is essential in the development of a productive STEM infrastructure

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