

# Jordan University of Science and Technology

## Improvement of medical content in the curriculum of biomedical engineering based on assessment of students outcomes.

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**Abstract:** BACKGROUND: Improvement of medical content in Biomedical Engineering curricula based on a qualitative assessment process or on a comparison with another high-standard program has been approached by a number of studies. However, the quantitative assessment tools have not been emphasized. The quantitative assessment tools can be more accurate and robust in cases of challenging multidisciplinary fields like that of Biomedical Engineering which includes biomedicine elements mixed with technology aspects. The major limitations of the previous research are the high dependence on surveys or pure qualitative approaches as well as the absence of strong focus on medical outcomes without implicit confusion with the technical ones. The proposed work presents the development and evaluation of an accurate/robust quantitative approach to the improvement of the medical content in the challenging multidisciplinary BME curriculum. METHODS: The work presents quantitative assessment tools and subsequent improvement of curriculum medical content applied, as example for explanation, to the ABET (Accreditation Board for Engineering and Technology, USA) accredited biomedical engineering BME department at Jordan University of Science and Technology. The quantitative results of assessment of curriculum/course, capstone, exit exam, course assessment by student (CAS) as well as of surveys filled by alumni, seniors, employers and training supervisors were, first, mapped to the expected students' outcomes related to the medical field (SOsM). The collected data were then analyzed and discussed to find curriculum weakness points by tracking shortcomings in every outcome degree of achievement. Finally, actions were taken to fill in the gaps of the curriculum. Actions were also mapped to the students' medical outcomes (SOsM). RESULTS: Weighted averages of obtained quantitative values, mapped to SOsM, indicated accurately the achievement levels of all outcomes as well as the necessary improv