A Mechanical Engineering Technology Baccalaureate Degree via the "3+1" Pathway

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Abstract

Institutions of higher education that seek to provide affordable degree pathways that are aligned with the needs of industry, and ultimately prepare students for employment, must strive to develop innovative partnerships and educational delivery modes. This paper details the fulfillment of the goals and objectives of a multi-year project, between a two-year college and a research university, that has resulted in the creation of an associate to baccalaureate degree "3+1" pathway in mechanical engineering technology. The degree pathway is based on a strong alignment with industry-defined requirements and emphasizes both technical and non-technical skills and competencies. Rigorous assessment methodologies have been included in both programs and will ensure the consistency of learning outcomes between both institutions. Both the associate and baccalaureate degree are supported by an applications database that directly links course content with industry practice in a clear and effective manner. The project's sustainability plan will be highlighted, including: increased enrollment and the use of student-generated tuition and fees; the leveraging of existing resources, including equipment, facilities, and personnel; outreach, recruitment, and job placement supported by industry partners; and an online tutorial for the applications library to ensure consistent training and implementation after the completion of the project. This novel and innovative educational delivery model will allow students to achieve a high-quality baccalaureate degree in mechanical engineering technology for close to the cost of a single year at some institutions.

Background

Numerous collaborations between higher education institutions and industry partners have been created in recent years with the purpose of aligning curriculum, and more importantly student-gained competencies, with the actual skills needed by employers (1,2). These models seek to increase the value of a higher education and minimize the degree of on-site and on-the-job training that must be delivered to a new employee after hiring.

Specifically, the skills and competencies supporting the Advanced Manufacturing sector have been shown to be in high demand and are the focus of the current project under National Science Foundation (NSF) Advanced Technological Education (ATE) grant No.1601487.

The goals and objectives of the NSF grant project are listed in Table I.

Table I. Goals of the Project

GOAL 1	**To strengthen an Engineering Technology program serving the southern New Jersey region.**
Objective 1.1	Highlight technical and non-technical (soft) skills across the curriculum; align with industry needs, including student work-based learning opportunities such as undergraduate research projects and internships.
Objective 1.2	Develop an applications library (real examples of STEM principles for instructional practices) as a resource for faculty to support relevant curriculum by presenting industry-relevant competencies, techniques and images that meet predetermined learning outcomes.
Objective 1.3	Strengthen career pathways throughout, and partnerships between, regional higher education institutions, secondary schools, and industry partners. Activities will include the creation of advisory committees, student work-based learning activities, and job placement support. Focus will be on job placement and recruitment support for graduates and industry partners. Additional emphasis will be on successful job placement for underrepresented student populations.
GOAL 2	**To serve as a conduit for the creation of programs and educational pathways that address unmet training needs and the needs of emergent high growth industries.**
Objective 2.1	Create a new academic program in Advanced Manufacturing (Associates Degree and a stackable certificate) by developing new curriculum through the adaptation of relevant models from national and regional NSF ATE programs, to support the Engineering Technology (ET) educational needs in the region.
Objective 2.2	Establish an Advanced Manufacturing training facility with input from industry leaders and educators to collaborate and produce skilled competent workers for industry.

Within the current effort, the definition of advanced manufacturing includes the "Use of innovative technologies to create existing products and the creation of new products. Advanced manufacturing can include production activities that depend on information, automation, computation, software, sensing, and networking" (3).

While a national need has been demonstrated for graduates and employees with advanced manufacturing skills (4,5), a regional need has been demonstrated as well for New Jersey. According to the Department of Labor and Workforce Development, New Jersey's Advanced Manufacturing Cluster contributed nearly $33.1 billion to the Gross Domestic Product in 2014, or about 6.6% of all output (6). Further New Jersey Advanced Manufacturing statistics include that approximately two-thirds of all manufacturing jobs are classified as advanced, average wages paid in many advanced manufacturing industries are above the statewide private sector average, and there were nearly 157,000 employees in the advanced manufacturing sector in 2015. Advanced Manufacturing industries within this sector include food, chemical, and machinery manufacturing as well as fabricated metal and computer and electronic product manufacturing.

The above statistics further reinforce the motivating rationale for the current project, namely that there is a critical need for students to achieve the identified skills and competencies required by a critical and robust regional and statewide industry, i.e. advanced manufacturing.

Rowan College at Burlington County (RCBC) and Rowan University (RU) have conducted past forums with New Jersey State and regional industry partners and have similarly made direct observations supporting the fact that there is a tremendous need for graduates to possess the skills and competencies valued by industry.

The intellectual merit and broader impact of the project involve the creation of new degree pathways that are structured in a "3+1" format, where RCBC will deliver the first three years of the program, after which students will transfer to RU as seniors, and complete the fourth year on RCBC's campus at a discounted tuition rate. This innovative delivery model is supported by the recommendations of the NJ State College Affordability Study Commission (7) in which the creation of "3+1" degree programs was identified as an opportunity to make college more affordable.

In order to serve as a conduit for the creation of programs and educational pathways that address unmet training needs and the needs of emerging high-growth industries, RCBC, RU, and secondary school partners have created an education-to-employment pathway within the advanced manufacturing discipline. This guided pathway emphasizes the skills and competencies valued by industry and will allow students to reach significant milestones as they progress by earning discrete certificates that may be combined to partially meet the requirements of the associates and baccalaureate degree. Students will have the opportunity to earn these certificates leading to an associate degree at RCBC, and then move toward the baccalaureate degree at RU. Furthermore, there will be opportunities for students to begin earning college credit while still in high school.

The planned education-to-employment pathway will be strengthened by the close partnership between RCBC and RU in both "2+2" and "3+1" program offerings. In these programs, students can complete their first two-years at RCBC and the remaining two-years at RU in "2+2" programs, or the first three-years at RCBC and their senior year at RU for "3+1" programs, respectively. It is planned that RU will deliver the senior year of select programs on the RCBC campus as part of the "3+1" program, including mechanical engineering technology with a concentration in advanced manufacturing.

Associate to Baccalaureate "3+1" Pathway

Associate of Applied Science in Mechanical Engineering Technology

The purpose of the Associate of Applied Science degree in Mechanical Engineering Technology (AAS.MET) is to prepare graduates to possess knowledge, problem solving ability, and hands-on skills to enter careers in the design, installation, manufacturing, testing, evaluation, technical sales, or maintenance of mechanical systems. Furthermore, associate degree programs must demonstrate that graduates can apply specific program principles to the specification, installation, fabrication, test, operation, maintenance, sales, or documentation of basic mechanical systems depending on program orientation and the needs of their constituents (8).

MET programs, according to the Accreditation Board for Engineering and Technology, Engineering Technology Accreditation Commission (ABET-ETAC), must have an applied basis in engineering mechanics/sciences.

The AAS degree in MET will have a concentration in Advanced Manufacturing and will focus on MET principles which serve the developing industrial areas that are highly reliant on computer controlled and automated systems, as well as those making use of novel technologies including big data analytics, automation and robotics, additive manufacturing, advanced materials, and biotechnologies.

The program is designed to be a two-year (AAS) degree that is transferable to the junior year of a Bachelor of Science degree program in Mechanical Engineering Technology (MET) that has been developed through a partnership with Rowan University.

Bachelor of Science in Mechanical Engineering Technology

At Rowan University, the Mechanical Engineering program has the highest enrollment of all engineering majors, and it turns away large numbers of highly-qualified students every year, owing to space and staffing limitations. Offering Mechanical Engineering Technology, as a "3+1" completion program, at RCBC will help to satisfy increasing student demand as well as provide employers in the state of NJ with a new source of highly skilled and talented workers.

Graduates of baccalaureate programs in MET are expected to possess knowledge, problem solving ability, and hands-on skills to enter careers in the design, installation, manufacturing, testing, evaluation, technical sales, or maintenance of mechanical systems. Baccalaureate degree graduates typically have strengths in the analysis, applied design, development, implementation, or oversight of more advanced mechanical systems and processes. Baccalaureate degree programs must demonstrate that graduates can apply specific program principles to the analysis, design, development, implementation, or oversight of more advanced mechanical systems or processes depending on program orientation and the needs of their constituents. The Program

Educational Outcomes for associate and baccalaureate degree programs (ABET-ETAC) are outlined in Table II.

Table II. Program Educational Objectives (PEO's) for Associate and Baccalaureate degrees (8)

	Associate Degree Programs	Baccalaureate Degree Programs
PEO		
a.	Application of principles of geometric dimensioning and tolerancing.	Application of principles of geometric dimensioning and tolerancing.
b.	Use of computer aided drafting and design software.	Use of computer aided drafting and design software.
c.	Selection, set-up, and calibration of measurement tools/instrumentation.	Perform selection, set-up, and calibration of measurement tools/instrumentation.
d.	Preparation of laboratory reports and systems documentation associated with development, installation, or maintenance of mechanical components and systems.	Elements of differential and integral calculus.
e.	Basic familiarity and use of industry codes, specifications, and standards.	Manufacturing processes.
f.	Use of basic engineering mechanics.	Material science and selection.
g.	An integrating or capstone experience utilizing skills acquired in the program.	Solid mechanics (such as statics, dynamics, strength of materials, etc.).
h.	Not applicable	Mechanical system design.
i.	Not applicable	Thermal sciences (such as thermodynamics, fluid mechanics, heat transfer, etc.).
j.	Not applicable	Electrical circuits (ac and dc) and electronic controls.
k.	Not applicable	Application of industry codes, specifications and standards.
l.	Not applicable	Technical communications typically used in preparation of engineering proposals, reports, and specifications.

The Student Outcomes for associate and baccalaureate degree programs (ABET-ETAC) are similar and are outlined in Table III.

Table III. Student Outcomes for Associate and Baccalaureate Degree Programs

	Associate Degree Programs	Baccalaureate Degree Programs
Outcome		
1.	An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline.	An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline.
2.	An ability to design solutions for well-defined technical problems and assist with the engineering design of systems, components, or processes appropriate to the discipline.	An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline.
3.	An ability to apply written, oral, and graphical communication in well-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.	An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
4.	An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results.	An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.
5.	An ability to function effectively as a member of a technical team.	An ability to function effectively as a member as well as a leader on technical teams.

The Engineering Technology Curriculum

The goal of RCBC's Engineering Technology pathway is to produce graduates who are able to obtain employment as a technologist or transfer to a four-year college. In addition, graduates will be technically competent, able to communicate effectively, work well with others and

demonstrate professionalism. Additionally, students will understand how products and machinery work on a detailed level.

In considering the entire “3+1” pathway from associate degree to baccalaureate degree, both levels of ABET-ETAC program and student outcomes have been considered in creating the new MET curriculum in anticipation of seeking ABET accreditation.

Table IV. outlines the four-year MET degree pathway within the “3+1” framework, with years 1-3 delivered by RCBC and year 4 delivered by Rowan University.

Table IV. Four-Year MET Degree Pathway within the "3+1" Framework

Mechanical Engineering Technology				
	As of 4/15/19			
FIRST YEAR- RCBC				
FALL	**CR**		**SPRING**	**CR**
Freshman Engineering Clinic I **EGR 151**	2		Freshman Engineering Clinic II **EGR 152**	2
Precalculus (Inc. Trig, LA) **MTH 130**	4		Calculus I & Analytical Geometry **MTH 118**	4
General Chemistry I w/Lab **CHE 115/116**	4		Humanistic Lit: Society, Ethics & Technology **SOC 160**	3
College Comp I **ENG 101**	3		Intro to Mechanical Design **MET 220**	3
Introduction to Computer Science **CSE 110(*)**	4		Artistic Literacy: **ART/MUS/THR 101**	3
**Must be C++ or Java Based*				
TOTAL	**17**		**TOTAL**	**15**
SECOND YEAR-RCBC				
FALL	**CR**		**SPRING**	**CR**
Sophomore Engineering Clinic I **EGR 251**	1		Sophomore Engineering Clinic II **EGR 252**	1
College Comp. II or Tech. Writing **ENG 102/105**	3		Public Speaking **SPE 102**	3
General Physics I w/Lab **PHY 210/211**	4		Mat Sci and Manufacturing **MET 235**	3
Engineering Statics **EGR 201**	3		Free Elective	3
CNC Programming I **MET 210**	4		Applied Thermal Energy I **MET 215**	3
TOTAL	**15**		**TOTAL**	**13**
2 year AAS degree program total credits			60	
THIRD YEAR-RCBC				
FALL	**CR**		**SPRING**	**CR**
Junior Tech. Clinic I - **EGR 351**	2		Junior Tech. Clinic II - **EGR 352**	2
General Physics II with lab **PHY 212/213**	4		Applied Thermal Energy II **MET 301**	3
Calculus II and Analytic Geometry **MTH 119**	4		Applied Fluid Mechanics **MET 311**	3
Engineering Dynamics **EGR 202**	3		Machine Design **MET 312**	3
MET Lab I (**NEW) MET 3XX**	3		Principles of Microeconomics **ECO 203**	3
TOTAL	**16**		**TOTAL**	**14**
FOURTH YEAR- Rowan University				
FALL	**CR**		**SPRING**	**CR**
Senior Tech. Clinic I / Senior Design I **EGR 451**	2		Senior Tech. Clinic / Senior Design II **EGR 452**	2
Advanced Manufacturing **MET 400**	3		Global Literacy Elective **GENED**	3
Applied Heat Transfer **MET 312**	3		Fundamentals of Circuits & Electronics **EET 2XX**	3
CNC Programming II MET 351	2		Quality & Reliability **MET 342**	3
MET Elective I **MET 4XX**	3		MET Elective II **MET 4XX**	3
Literature/Core Elective **GENED**	3			
TOTAL	**16**		**TOTAL**	**14**
Total program credits:	**120**			

Novel “3+1” Program Delivery

As outlined through RCBC’s and RU’s partnership, and as a result of both institution’s historical relationship, RCBC will deliver the third year (of four) in the MET program, providing an affordable and accessible pathway toward the baccalaureate degree.

The partnership includes the following key provisions relating to delivery of the third-year curriculum at RCBC:

- RU will determine the content and the learning outcomes for the courses, ensuring that the learning outcomes will be the same.
- RU will specify the credentials required for the professors chosen to teach the courses, and have the ability to review and comment on the curriculum vitae of the professors who are being considered to teach the courses.
- RCBC will be solely responsible for hiring the faculty and delivering the courses for first year to junior-level courses.
- Faculty at both institutions will periodically review the operation and success of the program.

The fourth year of the degree program will be delivered by RU, as RU courses in the RU degree programs, on the RCBC campus. The student’s candidacy for the bachelor’s degree will be evaluated solely by RU, and any certificates and degrees resulting from this program at the baccalaureate level will be awarded solely by RU. The RCBC campus has already been approved by the regional accreditor as an additional location where RU may offer degree completion programs.

Associate Degree-Granting Institution

For the associate degree-granting institution, RCBC, the key elements include the sharing of course syllabi and outcomes, the demonstrated ability to provide high quality academic instruction that is aligned with rigorous academic outcomes, and the presence of highly qualified, well-trained, and passionate faculty members.

The associate degree-granting institution must have processes in place to create direct analogs of any needed junior-level courses and must have effective outcomes assessment processes as well. The close monitoring of the achievement of learning outcomes will ensure the intended purpose of the "3+1" pathway is achieved. The assessments must include the same activities and criteria for success as at the baccalaureate degree-granting institution, including pre-assessments in some courses, as well as the same benchmarks, measurement methodology, and targeted learning outcomes. A close relationship between both institution's assessment offices must be developed.

Finally, in order to receive Federal financial aid, students must pursue coursework applicable to a degree program in which they are matriculated. Therefore, in order to earn up to 90 credits to transfer to the baccalaureate degree-granting institution, students must maintain aid eligibility and matriculation status beyond the initial 60 credits for an associate degree. One manner in which this can be accomplished is through the pursuit of a second aligned associate degree, in Advanced and Continuous Studies, in which there is no duplication of credits and allows students to progress to the 90 credits needed for transfer to the baccalaureate degree-granting institution as a senior.

Baccalaureate Degree-Granting Institution

For the baccalaureate degree-granting institution, Rowan University, a close alignment with the associate degree-granting institution courses and outcomes must be developed. Additionally, the institution must share the content and the learning outcomes for any needed courses, ensuring that the learning outcomes will be the same between both institutions.

Additionally, the baccalaureate degree-granting institution must be willing to share the credentials required for faculty, and have the ability to review and comment on the curriculum vitae of those being considered to teach the third year of the curriculum.

The baccalaureate degree-granting institution will be solely responsible for delivering the senior year courses and will have an opportunity to evaluate the student's candidacy for transition to the baccalaureate portion of the pathway. The baccalaureate degrees coming from this program will be awarded solely by the baccalaureate degree-granting institution.

Overall, this innovative "3+1" delivery model will provide access to both affordable and high-quality educational pathways, leading to both associate and baccalaureate degrees, in academic disciplines that are in high demand, and will provide employment opportunities for graduates.

Benefit to Students

The need for the "3+1" program model stems from the rising affordability and debt crisis affecting many students who pursue higher education to improve the quality of their lives (7, 9). Far too many students find themselves saddled with insurmountable debt incurred through the process of earning a college degree. Many students have difficulty finding timely employment in a challenging economy or eventually become underemployed, thereby making it difficult if not impossible to pay off their student loan debt. The proposed "3+1" program gives students an extension of the already affordable community college pathway towards a baccalaureate degree, in industrially relevant disciplines, with the ability to take 300-level courses at a more affordable rate. Students will then transfer to the four-year university, i.e., RU, to complete their baccalaureate degree.

Among the many benefits to students are:

• Being able to take the course at a location that is more convenient for them, in classrooms and with classmates that are already known to them.
• Paying tuition for the 300-level courses at the county college tuition rate.
• Paying tuition for the 400-level courses at a discounted RU rate if the course is taken on RCBC's campus.

• Avoiding many student fees that would be required if the student were to transfer and complete the degree on RU's campus.

Students participating in this "3+1 Program" will also be able to utilize the career services and placement office at RCBC which is more directly tied to the locale for in-field and internship requirements of the programs (where they exist), in addition to the career services (and larger alumni network) available at, and through, RU.

Outcomes Assessment

When specific learning principles need to be measured, overall course grades do not carry enough resolution to provide a precise determination. For example, a student may earn a grade of A in a course, but may still not have grasped and mastered a particular concept. In order to measure learning of a particular concept, student performance regarding that one concept must be probed. This often entails 'embedding' questions and problems that are carefully tailored to probe critical thinking skills pertaining to the concept of interest, and grading and compiling these results individually.

The Accreditation Board for Engineering and Technology (ABET) defines assessment as: "one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes and program educational objectives. Effective assessment uses relevant direct, indirect, quantitative and qualitative measures as appropriate to the objective or outcome being measured. Appropriate sampling methods may be used as part of an assessment process" (8).

In general, outcomes should be written with a consideration of Bloom's Taxonomy (10) which will include an appropriate range of competencies probed including Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. Additionally, the learning outcomes must be framed in terms of the goals that are expected of students.

The above-described assessments will be part of a standardized assessment plan at RCBC that will include the following steps:

1) Determine intended learning outcomes to be assessed using internal, and where possible, external benchmarks (i.e., ABET Program Educational Outcomes and Student Outcomes).

2) Develop two varied assessments for each outcome assessed and a criterion for success for each.

3) Conduct assessments and collect data using qualitative or quantitative analysis.

4) Develop an improvement plan to address weaknesses and strengths.

5) Implement the improvement plan into the operations.

At the programmatic level, RCBC follows a systematic model for the assessment of program learning outcomes (PLO's) as outlined by ABET. Within this model, all PLO's will be assessed once within a four-year cycle.

Additional detail regarding RCBC's assessment plan and standardized assessment procedures include:

• Measure quality and effectiveness in educational design and delivery, and the broader educational experience.

• Create a sustainable college climate for assessing student learning and institutional effectiveness outcomes.

• Support and encourage flexible approaches to assessment.

• Use assessment results to improve teaching, learning, utilization of campus services and engagement in student life.

The College will begin data collection for the first cohort during the Fall 2020 semester.

Sustainability Plan

It is planned that the following factors and strategies will sustain this project after NSF funding expires:

1) Projected increased enrollment due to new program offerings will generate student fees and revenues needed to sustain the program.

2) The program will leverage existing resources, including equipment, facilities, and personnel as well as contribute to the development and planning of a new state-of-the-art facility.

3) The cost of additional faculty and operating personnel will be absorbed by the operating budget.

4) Outreach, recruitment, and job placement will be supported by industry partners.

5) An online tutorial for an applications library of relevant concepts will be created for sustainability.

Final Project Activities

The final steps of the project, currently in its concluding phase, include the completion of the applications database and the creation of stackable certificates comprised of courses within the academic program.

Applications Database

The importance and application of science and engineering principles in our daily lives cannot be overstated. Materials and devices from semiconductors to microprocessors to the vehicles we drive rely on a highly sophisticated understanding of applications-based principles. With a struggling global economy on many sectors, and an increased focus on persistence and graduation rates, it behooves higher education in the United States to develop a meaningful approach to teaching the linkage between academic principles and the critical applications upon which we rely so heavily.

Extending this concept beyond technical skills, it has been shown from interactions with industry partners that non-technical or professional skills are also important. A comprehensive list of the technical, and non-technical, skills required by industry are outlined in Table V. Also indicated are the academic programs divisions within RCBC that the competency may be delivered and

have relevance. (HSC-Health Sciences, LA=Liberal Arts, and STEM=Science, Technology, Engineering, and Mathematics).

Table V.

Skills Required by Industry	Academic Division
Applied Basic Mathematics	HSC, LA, STEM
CAD/Imaging/Parametric Modelling	HSC, STEM
Blueprint and Plan Reading	STEM
(CNC) Programming/Basic Mathematics/Geometry	HSC, LA, STEM
Communication-Speaking	HSC, LA, STEM
Communication-Writing	HSC, LA, STEM
Computer Programming/Logic	HSC, LA, STEM
Creativity/Critical Thinking/Problem Analysis	HSC, LA, STEM
Geometric Dimensioning and Tolerancing	STEM
Safety/Risk Management	HSC, LA, STEM
Teamwork/Collaboration/Interpersonal Skills	HSC, LA, STEM
Work Ethic	HSC, LA, STEM

The formalized incorporation of applications will have the following common elements (11):

1) The application must have some readily identifiable significance; both in terms of functionality and economic benefit, and the underlying and reliant principles must be readily identifiable and well understood.

2) The underlying and reliant principles must be summarized in plain language and communicated with simple figures or tables when appropriate, and supported with student and instructor resource materials including background, OER materials, instructor teaching notes, student study notes, short tests and quizzes, and outcomes assessment criteria.

3) The application and principles must have significance to an emerging student, both in future academic courses (on the undergraduate and possibly graduate levels) and in their career experiences.

4) The introduction and development of the application must follow a sound pedagogical approach (i.e., the inclusion of Bloom's taxonomy in defining outcomes, etc.), as well as a standardized and consistent academic outcomes/assessment measurement approach.

Stackable Certificates

Through interactions with industry partners, it has come to light that within an Advanced Manufacturing curriculum and framework, there is a need for discrete opportunities to recognize the acquisition of program competencies, within a narrower scope and a more abbreviated timeline. This will be accomplished through the creation of shorter duration certificates, embedded within the program. The ability to earn certificates benefits associate and baccalaureate degree students by providing demonstrable milestones and feedback throughout the degree pathway, which will be of interest to employers.

Furthermore, stackable certificates benefit employers by providing a means to educate current employees in important skills and competencies who may already have a degree, or need training in only a portion of the Advanced Manufacturing degree program.

Summary

The current project employed an innovative approach toward collaboration between a College (RCBC) and a University (Rowan University) for the development of a Mechanical Engineering Technology baccalaureate degree "3+1" pathway. Both the associate and baccalaureate degrees have an advanced manufacturing focus. This unique "3+1" partnership between an associate degree-granting institution and a baccalaureate degree-granting institution involves a student-centric and affordable cost model in which the first three years are delivered by RCBC, and the fourth year is delivered by RU, on RCBC's campus.

The new program was created with significant industrial partner input and is aligned with the ABET-ETAC criteria for MET programs. Both non-technical and technical competencies, identified as important by industry partners, are a focus of the program.

Finally, this novel and innovative educational delivery model will allow students to achieve a high-quality baccalaureate degree in mechanical engineering technology for close to the cost of a single year at some institutions.

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