ONCAT PRE-HEALTH PROJECT PHASE TWO: 2014-15 CONTINUATION TO FULL IMPLEMENTATION

College Alignment of Pre-Health Programs to Facilitate Student Entry to High Affinity College and University Certificate, Diploma, Advanced Diploma and Degree Programs

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Executive Summary

The ONCAT Pre-Health Project Phase Two was a continuation of an earlier project designed to enhance the mobility of students whose goal was to pursue a postsecondary program in the health sciences. In order to facilitate student entrance to these programs, the Pre-Health Project Phase One had as its goal the development of Pre-Health programming in colleges that would incorporate common program learning outcomes and system-wide exemplars for the core courses in the programs. The outcome of the project was a recommendation that two levels of Pre-Health programming be implemented: one to prepare students for certificate and diploma programs and one to prepare them for advanced diploma and degree programs.

The goals of Phase Two were to complete the work of Phase One by finalizing system agreement on the content of the two programs and identifying strategies to facilitate system adoption of the programs that would meet the requirements of the two approval bodies, the Ministry of Training, Colleges and Universities and the Credentials Validation Service of the Ontario Colleges Quality Assurance Service. The results of Phase Two include broad system concurrence with the learning outcomes of the new programs and acceptance of the course exemplars, agreement of all stakeholders on the processes for college implementation of the new programs, and the identification of a range of potential destination programs that goes well beyond the initial target of health science programs. The project was not able to complete the consultation process with all stakeholders in the college and university system because of delays in the external approval processes. However, the team has developed a communications plan and is prepared to extend its work until June 30, 2015 in order to complete it.

Introduction

Pre-Health Sciences programs are two semester Ontario College Certificate programs designed to prepare students for entry into Health Science or other high affinity science-related programs at the Ontario College Certificate, Diploma or Advanced Diploma, and the college or university Baccalaureate Degree levels. The programs are of particular interest to Ontario high school graduates who do not meet the entry requirements for these programs or who do not feel appropriately prepared to be successful in their program of choice for reasons such as missing prerequisite subjects, insufficiently high grades in prerequisite subjects or length of time since completion of secondary school. They are also of interest to mature students and/or candidates who did not complete secondary school or who completed secondary school outside of Canada.

Although all 24 public colleges in Ontario offered programs designed to prepare students for entry into health programs under a variety of titles, prior to 2012, there was no formal alignment of program learning outcomes, with programs being designed variously for entry to diploma or degree programs, and to nursing and other high affinity science-based programs. Over time, and particularly with the emergence of baccalaureate degree programs offered by colleges, a strong feeling that there was a need for two levels of pre-health programming – one to prepare students for entry into programs at the certificate and diploma levels and one designed to prepare them for entry into the advanced diploma and degree programs – emerged within the college community. As an interest in ensuring maximum student mobility became more prevalent, it was also felt that it was critical for the core learning outcomes of pre-health programs to be aligned under a provincial standard to facilitate student mobility and admission into health programs.

In 2012, the Ontario College Heads of Health Sciences received funding from the Ontario Council on Admissions and Transfer (ONCAT) to support the development of a province-wide alignment of policy, practice and program learning outcomes to facilitate student mobility and inter-college admissions and credit transfer for Health Sciences and other high affinity programs. The goal of this work was to widen the opportunities for graduates by ensuring that graduates of Pre-Health Sciences Programs would be able to meet the admission requirement of Health Sciences and related programs across the province at either the diploma or degree (college or university) level upon the completion of appropriate required courses.

At the completion of Phase One of the project, two programs had been developed: the standard stream, intended to prepare graduates for admission to college certificate and diploma programs, and the advanced stream, designed to prepare graduates for entry to college advanced diploma programs and to college or university degree programs. Program outcomes were developed for both programs as well as course exemplars for core science and mathematics subjects for the programs. Recommendations regarding on-going review of the programs and exemplars, implementation policies and practices and the potential establishment of sets of program standards for Pre-Health Sciences programs by the Ministry of Training, Colleges and Universities were also developed as part of Phase One.

In order to engage the college community in a discussion of the outcomes of this project and to pursue system consensus on the program learning outcomes and course exemplars, ONCAT agreed to fund a second phase of the project. The goals of Phase Two included:

1. Finalize system agreement on the program learning outcomes for Pre-Health Sciences Standard and Advanced program streams;
2. Finalize system agreement on learning outcomes for course exemplars in Biology, Chemistry Mathematics and Physics at the standard and advanced levels;
3. Work with the Ministry of Training, Colleges and Universities (MTCU) and the Credential Validation Service (CVS) to determine appropriate procedures for implementation of two new programs, Pre-Health Sciences Standard and Pre-Health Sciences Advanced;
4. Provide advice and assistance to colleges regarding the CVS and MTCU procedures and forms for adoption of new program(s);
5. Recommend to the Vice-Presidents Academic of the colleges to encourage MTCU to adopt the program learning outcomes of the two new programs as provincial program standards;
6. Provide stakeholder groups with the history of the project and seek agreement that completion of the Pre-Heath Science programs will meet admissions requirements for allied health and high affinity science-related diploma and degree programs. Stakeholder groups in the Ontario colleges include:
    a. Vice-Presidents Academic,
    b. Deans of Health Sciences,
    c. Deans of Interdisciplinary Studies (responsible for Pre-Health Sciences programs offered under the General Arts and Science umbrella) and
    d. Registrars of Ontario colleges.

    Stakeholder groups in Ontario universities include:

    a. Deans of Nursing and Health Sciences and
    b. Registrars of Ontario universities.

Phase Two was approved in the summer of 2014 and work commenced in July of 2014. The project continued to be chaired by Dr. Cassandra Thompson, Dean of the School of Health and Wellness, Georgian College and Marlene Raasok, Executive Dean, Conestoga College, both of who are members of the Heads of Health Sciences Committee. Program descriptions for the two new pre-health program streams were drafted and program nomenclature and descriptions were discussed with Tim Klassen, Executive Director, Ontario Colleges Quality Assurance Service (OCQAS) which operates the Credentials Validation Service (CVS), the organization that validates learning outcomes for new and modified college programs. Discussions were also held with representatives of the MTCU regarding program titles, determination of program funding parameters and processes for colleges to adopt one or both of the new programs. Also discussed were potential issues that would need to be addressed in the event that some colleges chose not to implement either of the new programs. In October, 2014, Dr. Maureen Callahan was engaged as project manager for Phase Two, when Dr. McColm was unable to continue with the project.

In October, 2014, a Working Group was struck to finalize program descriptions, program learning outcomes and recommended program titles to enable a final consultation process with the college system Heads of Health Science, Heads of Interdisciplinary Studies, College Registrars, the CVS and the MTCU. The group met via teleconference several times in October, November and early December and made presentations to the Heads of Health Sciences, Heads of Interdisciplinary Studies and College Registrars. Some modifications to course exemplars were discussed and recommended and final

program learning outcomes and course exemplars for the program courses for the two new pre-health programs were approved by the team. These were then shared with the coordinators and academic administrators responsible for the Pre-Health Sciences programs at all 24 colleges.

Initially, it had been anticipated that the new pre-health programs would be developed and submitted for approval as provincial programs rather than as submissions by individual colleges, thus requiring that a process by which all colleges could indicate their agreement with the learning outcomes and course exemplars be developed. However, in discussions with the CVS and the MTCU over the fall of 2014, it emerged that colleges would be required to submit proposals for new programs or program modifications individually. In order to ensure that the alignment of program learning outcomes and the framework of course exemplars were maintained, the working group agreed that it would develop templates for the required CVS and MTCU documents to assist the colleges in developing their submissions.

In mid-December, a survey of college intentions regarding offering one or both of the proposed new programs was developed and circulated. The survey also asked colleges to identify any current articulation agreements for their pre-health programs to ensure that these would be included in discussions with the universities offering baccalaureate nursing programs. The survey is attached as Appendix A.

In January and February, 2015, several follow-up contacts were made with the colleges in order to ensure that the data on college intentions were as complete as possible. By the end of February, 2015, it was clear that there was a high level of system consensus on the program outcomes and course exemplars as demonstrated by the following summary of college intentions:

- 21 of 24 colleges intend to implement one or both of the new Pre-Health Sciences Pathways programs: four will offer Pathways to Certificates and Diplomas only; six will offer Pathways to Diplomas and Degrees only; and 11 will offer both programs. Implementation dates run from fall 2015 to fall 2017.
- The Pre-Health programs at two colleges are currently in program review and a decision on implementation of one or both of the new programs will be made following the completion of the program review process.
- One college does not intend to offer either of the new Pre-Health Sciences Pathways programs.

The summary of college intentions regarding the Pre-Health Sciences Pathways programs is attached as Appendix B. At the request of the MTCU, this summary was expanded to include the MTCU code under which each college is currently reporting Pre-Health Sciences student enrolment as well as the APS code for the program at each college. The MTCU also requested that the date each college intended to suspend enrolment in its current Pre-Health Sciences program be included. In order to provide this information, the following assumptions were made:

a. Colleges reporting Pre-Health under MTCU Code 41601 would suspend their current program when they implement the new program and colleges implementing both new programs would suspend their current program when they implement the first of the new programs.

b. However, recognizing that there may be January intakes that do not complete until December and that colleges will need to take the program suspension to their Board for approval, we entered a suspension date four months after the implementation of the new (or first new) program. E.g., if a college intends to implement one of the new Pre-Health programs in September 2015, it would suspend its current program as of December 2015.
c. Colleges reporting Pre-Health program activity under MTCU code 44700 will not suspend program 44700 as they may have other GAS activity reported under that code that will continue to run.

We then sent this summary to our college contacts and requested that they correct any inaccuracies in the data.

Program Learning Outcomes (Goal One)

System agreement on the proposed learning outcomes is strong. As noted above, only one college has indicated that it does not currently plan to proceed with either of the new programs. Two colleges have not yet committed to either of the new programs because they are currently in the process of program review with their Pre-Health programs. We understand that these two colleges will decide on implementation of the new programs when they have completed their program review process.

The proposed learning outcomes for the two new programs were submitted to the CVS for validation. As part of the validation process, the CVS suggested modifications to the Vocational Learning Outcomes (VLOs) as developed by the project team. The team was concerned that the revised VLOs did not adequately distinguish between the levels of learning outcomes of the two programs and that the graduate outcomes were not clearly stated. The team reviewed the VLOs and developed alternative wording to ensure that the outcomes of the new programs in terms of preparing graduates for entry to Certificate, Diploma, Advanced Diploma and degree programs were clearly stated and that both potential students and stakeholders at receiving institutions would have a clear understanding of how graduates would be prepared to be successful in specific programs. The revised VLOs were submitted to the CVS and have been validated. Although the wording of the revised program VLOs is different from that originally discussed with college representatives, the team relied on the content of the course exemplars in developing them and is confident that they are consistent with the core outcomes of the programs that colleges have reviewed and approved. We do not anticipate that the colleges will find the revised VLOs problematic in any way.

Course Exemplars for New Pre-Health Pathways Programs (Goal Two)

In the fall of 2014, following suggestions from members of the project team, some modifications were made to the Biology course exemplars for both programs and in January and February, 2015, modifications were made to the Math exemplar for the “Pathways to Diploma and Degrees” stream developed during Phase One of the project. The new Math exemplar is attached as Appendix C. The team is now in agreement with the course descriptions and detailed outlines for all course exemplars and course codes will be developed for posting on the ONCAT site. These exemplars were included in the package of materials circulated to all colleges during the process of establishing college intentions to implement the new programs.

As the individual colleges modify their pre-health programs to be consistent with the new program(s), they are modifying their courses or developing new ones to be consistent with the program VLOs and the course exemplars. Once this process is completed, colleges will be able to post their course equivalencies to the program exemplars on the ONCAT website.

Process for Implementation of New Pre-Health Pathways Programs (Goals Three and Four)

As discussed above, several meetings were held with the CVS and MTCU regarding implementation of the two new programs. It was determined that each college would need to file separate applications with both CVS and MTCU but that a template could be prepared with detailed program information to assist colleges with the process. It was also agreed that colleges currently offering a Pre-Health Sciences program could opt to apply for either a new program or a program modification in order to implement either or both of the two new programs.

Detailed templates of the required forms for both CVS and MTCU approval were prepared by the Working Group and circulated to all colleges. Four teleconferences were scheduled at which colleges could ask questions and seek clarification on completion of the forms and the implementation process. The Project Manager also responded to individual questions following the teleconferences. When the VLOs for the programs were modified in consultation with the CVS, we modified the templates and circulated them to all colleges. We believe that all 21 colleges that have elected to implement one or both of the new programs are currently in the process of completing the forms for submission to CVS and MTCU.

Copies of the final templates of the forms are attached as Appendix D.

Adoption of Program Learning Outcomes as Provincial Program Standards (Goal Five)

The project team approached the Coordinating Committee of Vice-Presidents Academic (CCVPA) to request that the committee approach the MTCU to request that the program learning outcomes when approved by the CVS and the MTCU be adopted as the provincial program standards. Discussions were held between the Project Co-Chairs and representatives of the MTCU and it is our belief that the MTCU will implement the program learning outcomes for the two new Pathways programs as provincial program standards.

Discussion with Stakeholder Groups re Agreement that Graduates of Pre-Health Programs will Meet Admissions Requirements for Allied Health and High Affinity Science and Technology Diploma and Degree Programs (Goal Six)

As noted above, the initial plan to submit the two new Pre-Health programs as a system approval rather than individual college approvals was not considered an appropriate strategy by the CVS and MTCU. Consequently, we changed our implementation plan to include consultations with the Vice-Presidents Academic. As the program learning outcomes for the two new Pre-Health Sciences Pathways programs have just recently been approved, the team has not been able to have discussions with stakeholders regarding formal statements that graduates of these programs will be considered eligible for admission to specific programs at individual institutions. However, we have undertaken an analysis of the admissions requirements for allied health and other high affinity Certificate, Diploma, Advanced Diploma and degree programs at Ontario colleges. Through this process, we have found that the courses included in the Pre-Health Sciences programs are prerequisites for admission into many college

programs beyond the health sciences. It should be noted that many science-related programs in the colleges are classified as Technology programs. However, because many of them have Biology, Chemistry and/or Physics as admissions requirements, we found that graduates of the Pre-Health Sciences programs could be eligible for many Technology programs at the diploma and advanced diploma levels. As an example, there are four degree programs and over 25 advanced diploma programs in health sciences and technology currently offered by Ontario colleges which could be open to graduates of the Pre-Health Sciences Pathway to Diplomas and Degrees program. There are a similar number of health sciences and technology diploma programs for which graduates of the Pre-Health Sciences Pathway to Certificates and Diplomas could be eligible. A list of likely destination programs for gradates of the two Pre-Health Sciences programs is attached as Appendix E. Consequently, we recommend that the planned consultation with the Heads of Health Sciences at the colleges be expanded to include the Heads of Technology and that the colleges be requested to review the program learning outcomes and course exemplars to determine which of their programs will be open to graduates of the new pre-health science programs.

The university Bachelor of Science in Nursing is a logical destination program for graduates of the Pathway to Diplomas and Degrees. However, we believe that there are likely many other science-related programs offered at universities for which graduates of this pathway program could be eligible. We would like to pursue identification of these programs in the April through June 2015 period if an extension to this project could be approved.

We propose that formal consultation with Deans and Registrars take place in the spring of 2015 with the intent of reaching formal agreements by the end of June, 2015. We anticipate that it will also be necessary to work with College Registrars to identify strategies that will enable those colleges who plan to implement one or both of the new Pre-Health Sciences Pathways programs in fall 2015 to do so within the constraints of the current admissions cycle. We will seek the assistance of Colleges Ontario and its Coordinating Committees and of the Council of Ontario Universities to identify an appropriate and efficient consultation process.

Appendix A: **Survey of College Intentions to Offer New Pre-Health Sciences Programs**

College: _____

Current Pre-Health Sciences Programs

Do you currently offer any Pre-Health/Science programs? _____YES _____NO

For each Pre-Health/Science program you currently offer, please provide the following information:

Program 1

Name of program: _____

This program meets or exceeds the learning outcomes of proposed Program (select A or B) A B

There are currently bilateral articulation agreements between this program and the following programs/institutions:

1. University: _____ Destination Program: _____
2. University: _____ Destination Program: _____
3. University: _____ Destination Program: _____

Program 2

Name of program: _____

This program meets or exceeds the learning outcomes of proposed Program (select A or B) A B

There are currently bilateral articulation agreements between this program and the following programs/institutions:

1. University: _____ Destination Program: _____
2. University: _____ Destination Program: _____
3. University: _____ Destination Program: _____

New Program Implementation Plan

If Program A (destination Certificate or Diploma programs) is approved, our college will commit to meeting the new learning outcomes by: (insert date) _____

If Program B (destination Advanced Diploma or Degree) is approved, our college will commit to meeting the new learning outcomes by: (insert date) _____

Information Source: (Insert name, position and contact information)

Appendix B: Summary of College Intentions to offer new Pre-Health Sciences Programs

College	Current Program Title	Current MTCU Code	Current APS Code	Expected Date of Suspension	Will implement *Pre-Health Pathways to Certificates and Diplomas*	Expected date of Implementation	Will implement *Pre-Health Pathways to Diplomas and Degrees*	Expected date of Implementation
Algonquin	General Arts and Science	44700	01345	NA – other GAS program options will continue	Yes	Sept. 2017	Yes	Sept. 2017
Cambrian	Pre-Health Sciences	41601	01248	Dec. 2015	Yes	Sept. 2017	Yes	Sept. 2015
Canadore	Pre-Health Sciences	41601	01153	Dec. 2015	Yes	Sept. 2015	No	NA
Canadore	Indigenous P-H Studies	41601	01193	Dec. 2015				
Centennial	Pre-Health	41601	01200	Dec. 2015	Yes	Sept. 2015	No	NA
Centennial	Health Foundations	41601	01276	Dec. 2015				
Collège Boréal	Pre-Health Sciences	41601	01111	Dec. 2016	Yes	Sept. 2016	Yes	Sept. 2017
Conestoga	Pre-Health Sciences	41601	01219	Dec. 2015	Yes	Sept. 2015	Yes	Sept. 2015
Confederation	Pre-Health Sciences	41601	01165	Dec. 2015	Yes	Sept. 2015	Yes	Sept. 2015
Durham	General Arts and Science	44700	01141	NA – other GAS program options will continue	Under review		Under review	
Fanshawe	Pre-Health Sciences	41601	01099	Dec. 2016	Yes	Sept. 2016	Yes	Sept. 2016
Fleming	Preparatory Health Science	41601	01188	Dec. 2016	Yes	Sept. 2016	Yes	Sept. 2016
George Brown	Pre-Health Sciences	41601	01201	Dec. 2016	TBC		Yes	Sept. 2016
Georgian	Pre-Health Sciences	41601	01155	Dec. 2015	No	NA	Yes	Sept. 2015
Humber	General Arts and Science	44700	01276	NA – other GAS program options	No	NA	Yes	Sept. 2017

				will continue				
Lambton	Pre-Health Sciences	41601	01058	Dec. 2015	Yes	Sept. 2015	No	NA
La Cité collégiale	Pre-Health Sciences	41601	01135	Dec. 2015	Yes	Sept. 2015	No	NA
Loyalist	Pre-Health Sciences	41601	01112	Dec. 2015	Yes	Sept. 2015	Yes	Sept. 2015
Mohawk	Pre-Health	41601	01219	Dec. 2015	Yes	Sept. 2015	Yes	Sept. 2015
Niagara	Pre-Health Sciences	41601	01180	TBC	Under review		Under review	
Northern	Pre-Health Sciences	41601	01207	Dec. 2015	No	NA	Yes	Sept. 2015
Sault	Pre-Health Sciences	41601	01158	Dec. 2016	Yes	Sept. 2016	Yes	Sept. 2016
Seneca	Pre-Health Sciences	41601	01227	Dec. 2016	No	NA	Yes	Sept. 2016
Sheridan	General Arts and Science	44700	01197	NA – other GAS program options will continue	No	NA	Yes	Sept. 2015
St. Clair	Pre-Health Sciences	41601	01170	NA	No	NA	No	NA
St. Lawrence	Pre-Health Sciences	41601	01184	Dec. 2015	Yes	TBC	Yes	Sept. 2015

Appendix C: Revised Exemplar for Mathematics, Pathways to Diplomas and Degrees

COLLEGE SYSTEM EXEMPLAR COURSE OUTLINE
Pre-Health Sciences Pathways to Diplomas and Degrees

Course Name: Mathematics for the Health Sciences

Date Revised: February 4, 2015

Revised by:

Joanne MacLellan	**Cambrian College**
Afshin Azari-Vala	**George Brown College**
Diane Bergeron	**College La Cite**
Sherry King	**Confederation College**
Cathy Skimson	**Conestoga College**

Total Hours of Instruction: Minimum 90 hours to meet course outcomes

Prerequisite(s): College determined

Corequisite(s): College determined

Course Description:

By the end of this course, students will have demonstrated the ability to evaluate a variety of arithmetic and algebraic expressions and apply these principles to typical situations that arise in the health care fields. Concepts studied include numeracy fundamentals; systems of measurement and dimensional analysis; algebra, with an emphasis on analytical techniques; and evaluating systems of linear equations. Students will develop essential critical thinking and problem-solving skills through exposure to application problems, including dosage calculations, solution dilutions, concentrations and pH. Students will use numerical methods to calculate measures of center and variation, along with graphs, charts, and tables to effectively describe, analyze and interpret data. Empirical and theoretical probability of simple events using key rules of probability will be calculated. Students will distinguish between discrete and continuous probability distributions and describe key features of the standard normal distribution. Students will calculate probabilities and values using the standard normal distribution, and calculate confidence intervals for means and proportions and apply descriptive and inferential statistics to the health care field.

Course Outcomes:

1. Correctly perform multi-step mathematical operations, including addition, subtraction, multiplication, division, and exponentiation with numbers in their various forms- whole, integers, and rational (fractions and decimal) numbers.
2. Simplify algebraic expressions using commutative, associative, and distributive properties and by applying the rules of exponents.
3. Convert weight, volume, length, and temperature measurements within and across the US Customary and SI (metric) measurement systems.
4. Apply significant figure and rounding rules to mathematical calculations.
5. Solve a variety of health-care related application questions, including percents, proportions, and formula substitution.
6. Evaluate systems of linear equations graphically and mathematically.
7. Determine the theoretical or empirical probability of a simple event or combination of events for discrete sample spaces using the additive and multiplication rules for probability
8. Explain the role of data in statistical studies and the importance to ensuring data collection is reliable.
9. Construct, interpret, and analyze statistical tables and graphical summaries.
10. Mathematically determine statistical measures of center and variation for numerical and graphical data and interpret the result.
11. Distinguish between discrete and continuous probability distributions
12. Demonstrate an understanding of continuous probability distributions and describe key features of the standard normal distribution
13. Calculate probabilities and values using the normal distribution table and apply normal distribution and the central limit theorem to appropriate health care situations.
14. Estimate the confidence interval for means and proportions

Detailed Course Content:

When you have earned credit for this course, you will have demonstrated an ability to:

1. NUMERACY FUNDAMENTALS

1.1 Identify numbers in their various forms: whole numbers, integers, and rational numbers (fractions and decimals)
1.2 Identify and correctly use inequality symbols, absolute values, and exact numbers
1.3 Evaluate numerical exponential and square root expressions
1.4 Evaluate multi-step mathematical expressions with numbers in their various forms: whole, integers, and rational (fractions and decimal) numbers.
1.5 Perform ratio/proportion calculations.
1.6 Solve percent expressions by equation or proportion.

1.7 Convert between ratios, fractions, decimals, and percents.
1.8 Apply ratios and percent formulas to solve health-related application problems such as dosage, mixtures, and solutions.
1.9 Determine the number of significant figures in a measurement.
1.10 Apply the rules of addition/subtraction and multiplication/division to determine the appropriate number of significant digits in the answer.
1.11 Apply the rules for rounding.
1.12 Express numbers in scientific notation.
1.13 Apply properties of exponential expressions to scientific notation.
1.14 Define the metric system (SI) prefixes.
1.15 Perform metric system conversions without the use of a conversion chart.
1.16 Perform dimensional analysis for US Customary and metric measurement system conversions.
1.17 Convert between the common temperature measurement systems (°C, °F, K).
1.18 Solve application problems involving perimeter, area, volume and capacity of simple geometric figures.

2. ALGEBRA

2.1 Simplify algebraic expressions by commutative, associative, and distributive properties.
2.2 Evaluate algebraic expressions by substituting known values for the variables.
2.3 Multiply and divide monomials.
2.4 Use the rules of exponents to simplify expressions.
2.5 Solve rational equations containing constant denominators
2.6 Solve word problems by translating verbal phrases into algebraic expressions.

3. LINEAR EQUATIONS

3.1 Solve systems of two variable linear equations by graphing, substitution, or addition/subtraction methods.
3.2 Predict x-y intercepts algebraically.
3.3 Construct an x-y scatter plot given a set of ordered pairs.
3.4 Differentiate between independent and dependent variables.
3.5 Predict the value for the dependent variable based on a given regression equation.
3.6 Determine whether a correlation is significant.

4. EXPONENTIALS AND LOGARITHMS

4.1 Identify the graph of a basic exponential or logarithmic function.
4.2 Solve exponential and logarithmic (base 10) equations.
4.3 Apply exponential equations to solve exponential growth, decay, and isotope half life application problems.
4.4 Use logarithmic equations to determine solution pH and hydrogen ion concentration.
4.5 Rewrite equations in exponential or logarithmic form.

5. PROBABILITY

5.1 Explain the concept of probability.
5.2 Construct sample spaces and determine the probability of a simple event.
5.3 Describe simple, mutually exclusive, and non-mutually exclusive probability
5.4 Determine the complement of an event.
5.5 Use the additive and multiplicative rules of probability.
5.6 Determine event probabilities by constructing and interpreting contingency tables.

6. STATISTICS

6.1 Describe the meaning of the term statistics, why statistics are important in the health sciences, and the role of statistics in the research process.
6.2 Describe the difference between descriptive and inferential statistics.
6.3 Define and explain the differences between a population and a sample, a population parameter, and sampling statistic.
6.4 State and explain the differences and similarities between different sampling methods.

7. ORGANIZING DATA

7.1 Differentiate between qualitative and quantitative data.
7.2 Construct and interpret common graphical representations of data, including histograms, bar charts, and pie charts.
7.3 Define the term frequency and calculate a frequency distribution, relative frequency distribution, and cumulative frequency distribution.
7.4 Construct and interpret frequency tables for nominal and ordinal data.

8. DATA MANAGEMENT

8.1 Explain why central tendency and dispersion are important.
8.2 Calculate the mean, median and mode for a set of data and explain what these measures represent.
8.3 Identify the types of variables that the mean, median, and mode are most appropriate.
8.4 Describe skewness and how it affects the mean.
8.5 Define the term outlier and its impact on central tendency and dispersion.
8.6 Calculate variance, standard deviation, range, inter-quartile range, and percentiles.

9. PROBABILITY DISTRIBUTIONS

9.1 Differentiate between discrete and continuous probability distributions.
9.2 Determine event probabilities for a given discrete probability distribution.
9.3 Explain the concept of the standard normal distribution and its importance for inference.
9.4 Calculate event probabilities based on transforming raw scores to z-scores and percentiles and understand how they are applied to decision-making situations.
9.5 Transform z-scores into raw scores given an event probability.
9.6 Apply the central limit theorem for means and proportions.
9.7 Estimate the confidence interval for means and proportions.

Required Student Resources (Including textbooks and workbooks):

- Textbooks and resources will be at a post-secondary level, samples may be provided

Optional Resources:

Evaluation:

In order to successfully complete this course, the student is required to meet the following evaluation criteria:

- Individual testing will account for least 60% of the final grade

Academic Policies:

- Specific to the institution

Grading System:

- Specific to the institution

Appendix D: **Templates of Forms for Submission**

1. MTCU Request for Approval for Funding Form: Pre-Health Sciences Pathways to Certificates and Diplomas

2. MTCU Request for Approval for Funding Form: Pre-Health Sciences Pathway to Diplomas and Degrees

3. CVS Application Form for Program Proposal: Pre-Health Sciences Pathway to Certificates and Diplomas

4. CVS Application form for Program Proposal: Pre-Health Sciences Pathway to Diplomas and Degrees

Ontario

Ministry of Training, Colleges and Universities
Colleges of Applied Arts and Technology

Request for Approval for Funding Form

Pre-Health Project Members - Please complete highlighted areas.

☐ Request for new postsecondary program

☒ Request for modification to existing postsecondary program
Provide existing MTCU code and APS number: MTCU 41601 APS 01155
(Programs may need to migrate to this code)

College contact person responsible for this proposal:	
Name:	E-Mail:
Title:	Telephone:

Program Information

College:
Program title: Pre-Health Sciences Pathway to Certificates and Diplomas
Program duration: 2 semesters
Proposed date of implementation: Enter Month and Year
Proposed Classification of Instructional Program Codes, formatted as 51.000. Health services/allied health/health sciences general This is a post-secondary program that prepares students for admission into health and sciences programs. *For additional information, please refer to most recent Classification of Instructional Programs (CIP) Canada published by Statistics Canada, available on http://www.statcan.gc.ca/.*
Projected four-digit National Occupational Classification Codes (3 maximum), formatted as ####: 1. 2. 3. *For additional information, please refer to most recent National Occupational Classification (NOC) Canada published by Statistics Canada, available on http://www.statcan.gc.ca/.*
Proposed annual tuition fee for this program (at implementation):

Attestation

I attest that the following six criteria have been evaluated and met for the proposed program: ☒ The Credentials Validation Service (CVS) has confirmed that the proposed program of

☐ Request for new postsecondary program

☒ Request for modification to existing postsecondary program

Provide existing MTCU code and APS number: MTCU 41601 APS 01155 (Programs may need to migrate to this code)

College contact person responsible for this proposal:
Name: E-Mail:
Title: Telephone:

Program Information

College:
Program title: Pre-Health Sciences Pathway to Certificates and Diplomas
Program duration: 2 semesters
Proposed date of implementation: Enter Month and Year
Proposed Classification of Instructional Program Codes, formatted as 51.000. Health services/allied health/health sciences general This is a post-secondary program that prepares students for admission into health and sciences programs. *For additional information, please refer to most recent Classification of Instructional Programs (CIP) Canada published by Statistics Canada, available on http://www.statcan.gc.ca/.*
Projected four-digit National Occupational Classification Codes (3 maximum), formatted as ####: 1. 2. 3. *For additional information, please refer to most recent National Occupational Classification (NOC) Canada published by Statistics Canada, available on http://www.statcan.gc.ca/.*
Proposed annual tuition fee for this program (at implementation):

Attestation

I attest that the following six criteria have been evaluated and met for the proposed program:

☒ The Credentials Validation Service (CVS) has confirmed that the proposed program of instruction conforms to the Credentials Framework and is consistent with accepted nomenclature or the program of instruction has been granted ministerial consent.

☒ There is either demonstrated, a) labour market and student demand, or b) societal need and student demand for the program.

☒ A relevant program advisory committee is in place and has recommended the program.

☒ The program content and delivery is and will be compliant with all requirements of regulatory bodies responsible for the field of study or other regulatory bodies related to the field of study.
Please list all applicable mandatory and those voluntary regulatory bodies considered relevant to the program: Not applicable
☒ The program meets the relevant program standards where they exist and essential employability skills and general education requirements.
☒ The board of governors and President has approved the program of instruction.

Other Attachments

Requirements for Ontario College Certificate, Diploma, Advanced Diploma, and Graduate Certificate:
☒ 1.1 Program Delivery Information (PDI) Section
☐ 1.2 High Demand Program Comparator Information Section (if seeking approval to charge a "high demand" tuition fee)
☒ 1.3 Strategic Mandate Agreement Alignment Section
☒ 1.4 Program Comparator Section
☒ 1.5 Credentials Validation Service Application for Program Validation and Validation Letter

Requirements for college baccalaureate degrees in an applied area of study:
☐ 1.1 Program Delivery Information (PDI) Section
☐ 1.2 High Demand Program Comparator Information Section

For college baccalaureate degrees in an applied area of study, please see the Directives and Guidelines for Applying for Ministerial Consent under the Post-secondary Education Choice and Excellence Act, 2000 for the complete submission requirements for applicants, the consent process and the policy considerations that inform the Minister's decisions.

_____ _____

Name: Date
President

This application must be approved and signed by the college President in order to be considered complete.

Send one complete copy of this submission to: PSEprogramsubmissions@ontario.ca. For further information, contact: College Program Approvals, Colleges Unit, Ministry of Training, Colleges and Universities, Mowat Block, 7th Floor, 900 Bay Street, Toronto, ON M7A 1L2 (416-325-2887).

1.1 Program Delivery Information (PDI) Section

Total Hours per Student

College:	Program title: Pre-Health Sciences Pathway for Certificates and Diplomas

Indicate the number of hours that a student is required to spend in each instructional setting in each semester or level of this program. All hours in all instructional settings are to be noted.

** SAMPLE hours for a 14 week semester

Funded Instructional Settings*	**Semester/Level**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
Classroom instruction	**219**	**219**								**438**
Laboratory/workshop/ fieldwork	**42**	**42**								**84**
Independent (self-paced) learning										
One-on-one instruction										
Clinical placement										
Field placement/work placement										
Small group tutorial										
TOTAL	**261**	**261**								**522**

** SAMPLE hours for a 15 week semester

Funded Instructional Settings*	**Semester/Level**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
Classroom instruction	**237**	**237**								**474**
Laboratory/workshop/ fieldwork	**45**	**45**								**90**
Independent (self-paced) learning										
One-on-one instruction										
Clinical placement										

Field placement/work placement										
Small group tutorial										
TOTAL	**282**	**282**								**564**

Non-funded Instructional Settings*	**Semester/Level**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
Co-op work placement - Mandatory										
Co-op work placement - Optional										
TOTAL										

*Definitions for each instructional setting can be found in Appendix A.

1.2 High Demand Program* Comparator Information Section

Annual Tuition Fees based on two-semester year

College:	Program title:
Proposed annual tuition fee for this program: $	

If this program is high demand, please provide comparator information**. Please note you must use a program at another college as a comparator.

MTCU Code	College	Program Name	Tuition Fee
			$
			$
			$
			$
			$

***Definition of high demand program** (formerly "additional cost recovery" or ACR): a program of instruction eligible for general purpose operating grant funding for which colleges have the discretion to charge fees above the maximum permitted for regular-fee programs. This discretion is allowed for applied degree, post-basic or Baccalaureate of Nursing programs and/or for basic programs which have been determined to meet each of the following three criteria: 1) there is high demand for instructional space; 2) graduates have above-average prospects for employment; and 3) graduates have the potential to earn an above-average income.

All post-basic, college baccalaureate degrees in an applied area of study and Baccalaureate of Nursing programs are automatically considered high demand. Basic programs are considered high demand if they satisfy the above 3 criteria.

****Comparator tuition fee should not include ancillary fees** and can be found here: http://caat.edu.gov.on.ca/HTMLpages/Finance_Eng.html

If no comparator program exists, please refer to the Tuition and Ancillary Fees Operating Procedure, the Guidelines for the Implementation of the Tuition Fee Policy for Colleges of Applied Arts and Technology. For further assistance, please contact the Ministry of Training, Colleges and Universities, Colleges Finance Unit at 416-325-5426.

1.3 Strategic Mandate Agreement (SMA) Alignment Section

** SAMPLE ONLY – Please complete for your college.

Section A *(Required for Expedited and Full Review)*

Please indicate the program area of strength or growth identified in your college's signed SMA to which this program approval request aligns.

Health and Pathways: it prepares students with the pre-requisite admission requirements for entry into health and sciences programs at the College.

Please explain how this program is aligned with the indicated program area of strength or growth. *(150 words recommended maximum)*

This proposal is to align our current programs with the proposed new learning outcomes for the standard stream based on the work from the Pre-Health ONCAT project.

Does your college's SMA note that further discussion or information would be required during approvals?

☐ Yes ☒ No

If yes, please complete Section B.

Section B *(Required for Full Review only)*

Please include the relevant note from your college's SMA that indicates further discussion or information is required.

Please outline a rationale, including evidence, to support the consideration of this program approval request. (*400 words recommended maximum*)

Pre-Health Sciences Programs are a two semester post-secondary programs that prepare students to be admitted and to be successful in Health Sciences programs offered at colleges. The applicants to these programs are students who do not meet the admission requirements for Health Sciences programs generally because they have not completed the required high school science and math requirements or achieved the required grades for entry.

All twenty-four colleges in Ontario offer a Pre-Health Sciences Programs using a variety of titles. Some programs were explicitly designed for admission to diploma studies, and some for admission to degree level studies particularly nursing; still other programs appear to prepare for admission to both levels. As a result of this diversity of nomenclature and purpose which has led to confusion both for applicants and receiving Health Sciences Programs, an ONCAT Pre-Health project was initiated in 2012-13. This project resulted in the development of two levels of program outcomes and two program descriptions: 1. Pre-Health Sciences Pathway to Certificates and Diplomas and 2. Pre-Health Sciences Pathway to Diplomas and Degrees. Colleges may choose to offer one or both programs.

For background and evidence please refer to the report of the Heads of Health Sciences Pre-Health Sciences project July 17, 2013.

Please provide evidence that a relevant program advisory committee has recommended the program. Include attachments as required. (400 words recommended maximum)

The ONCAT Pre-Health Sciences project has had the support of the Vice-Presidents Academic, Heads of Health Sciences and Heads of Interdisciplinary Studies Coordinating Committees of the colleges. In addition 21 colleges have indicated their intent to offer one or both of the programs; two other colleges are currently reviewing their pre-health programs and will make a decision regarding implementation at the end of those processes.

1.4 Program Comparator Section

Sample ONLY – Complete with information from your college. Sample information listed below.

Key Performance Indicators (KPIs)

Please complete this table with the three most recent years of published data* for similar programs at your college only (minimum one, maximum three). Similar programs may include programs at the same or different credential levels, and transfer opportunities. Please add additional rows as needed.

Program		Academic Year Of Graduation	2011-2012	2012-2013	2013-2014
MTCU Title	MTCU Code				
		Graduate Count			
		Employment Rate**	NA	NA	NA
		Employment Rate in a Related Field***	NA	NA	NA

*KPIs are to be calculated in accordance with the methods prescribed by MTCU. KPIs are based on graduates of MTCU approved full-time postsecondary programs whose funding status is shown in the graduate record layout as MTCU operating grant, Co-op Diploma Apprenticeship or Second Career, and who were surveyed by telephone.

** Employment Rate = (number of survey respondents employed Full-time or part-time, related or unrelated) / (number of survey respondents in labour force)

*** Employment Rate in a Related Field = (number of survey respondents employed Full-time or part-time, related) / (number of survey respondents in labour force)

Additional explanation/information that contextualizes the KPI outcomes above, such as student demand or labour market analysis, may be provided. (400 words recommended maximum)
Depending on the admitting program, students from Pre-Health programs may not require full credential in order to gain admission into some health and other high affinity programs. For example some Practical nursing programs only require the math, chemistry and/or biology and not the Pre-health graduate certificate.

How many other colleges within <u>your region</u> are approved for funding to offer programs in this same MTCU code?
Enter number of colleges in your region offering Pre-Health program

*Please refer to the APS-MTCU Table available on the CAAT Extranet Site, in the Programs Section, for a complete list of programs approved for funding through the College Funding Framework, at http://caat.edu.gov.on.ca/ (user name: caatsite; password: 900Mowat).

1.5 Credentials Validation Service Application for Program Validation and Validation Letter

Please note that the Ministry is requesting that colleges now submit all program documentation for a program funding approval request directly to the Ministry.

Please append the following documentation to this application:

1. Credentials Validation Service Validation (CVS) Letter
2. Credentials Validation Service Application for Program Validation

APPENDIX A

Instructional Settings

THE FOLLOWING DEFINITIONS ARE TO BE USED BY COLLEGES WHEN COMPLETING THE PROGRAM DELIVERY INFORMATION TO CALCULATE PROGRAM FUNDING PARAMETERS FORM REQUIRED FOR MINISTRY-FUNDED PROGRAMS OF INSTRUCTION

CLASSROOM INSTRUCTION: INSTRUCTION THAT MAY BE PROVIDED IN A SETTING IN WHICH INDIVIDUALS DO NOT REQUIRE ACCESS TO EQUIPMENT, EXCEPT AS LISTED BELOW:

- *SITUATIONS IN WHICH MICROCOMPUTER LABS ARE USED FOR INSTRUCTION IN STANDARD WORD PROCESSING, SPREADSHEET, AND DATABASE SOFTWARE PACKAGES*
- *"TRADITIONAL" CLASSROOMS AND LECTURE HALLS*
- *"VIRTUAL" CLASSROOMS USED IN ON-LINE LEARNING*
- *SITUATIONS IN WHICH LABORATORIES AND WORKSHOPS MAY BE USED FOR CONVENIENCE*

LABORATORIES/WORKSHOPS/FIELDWORK: SCHEDULED HOURS OF ACTIVITIES INTENDED TO GIVE STUDENTS HANDS-ON EXPERIENCE; THIS INSTRUCTIONAL SETTING IS CHARACTERIZED BY:

- *ACTIVITIES IN WHICH STUDENTS ARE PROVIDED WITH INSTRUCTION AND ARE DIRECTLY SUPERVISED BY COLLEGE STAFF.*
- *SETTINGS EITHER INSIDE COLLEGE FACILITIES (E.G., LABORATORIES, WORKSHOPS) OR OUTSIDE COLLEGE FACILITIES (E.G., FIELDWORK) IN WHICH INDIVIDUAL STUDENTS ARE REQUIRED TO USE INSTRUCTIONAL EQUIPMENT AND/OR SUPPLIES. THESE SETTINGS DO NOT INCLUDE SITUATIONS IN WHICH MICROCOMPUTER LABS ARE USED FOR INSTRUCTION OF STANDARD WORD PROCESSING, SPREADSHEET, AND DATABASE SOFTWARE PACKAGES OR SITUATIONS IN WHICH LABORATORIES AND WORKSHOPS ARE USED FOR CONVENIENCE.*

INDEPENDENT (SELF-PACED) LEARNING: STUDENT DIRECTED LEARNING IN WHICH CONTACT WITH COLLEGE STAFF IS LIMITED TO SITUATIONS IN WHICH ADVICE OR SOLUTIONS TO SPECIFIC PROBLEMS IS SOUGHT; **USUALLY ONLINE LEARNING.**

ONE-ON-ONE INSTRUCTION: THOSE EXCEPTIONAL SITUATIONS IN WHICH COLLEGE ACADEMIC STAFF CAN PROVIDE INSTRUCTION TO ONLY ONE STUDENT AT A TIME, **E.G. IN A FLIGHT SIMULATOR OR ON TOP OF AN ELECTRICAL TOWER.**

CLINICAL PLACEMENT: SCHEDULED HOURS OF ACTIVITIES INTENDED TO GIVE STUDENTS HANDS-ON EXPERIENCE IN A HOSPITAL OR HEALTH CARE SETTING; THIS INSTRUCTIONAL SETTING IS CHARACTERIZED BY:

- *ACTIVITIES THAT ARE AN INTEGRAL COMPONENT OF THE CURRICULUM OF THE PROGRAM AND NECESSARY FOR THE SUCCESSFUL COMPLETION OF THE PROGRAM.*

- *ACTIVITIES IN WHICH STUDENTS ARE CONTINUALLY SUPERVISED DIRECTLY BY COLLEGE STAFF OR INDIVIDUALS WORKING ON BEHALF OF THE COLLEGE.*

FIELD PLACEMENT/WORK PLACEMENT: SCHEDULED HOURS OF ACTIVITIES INTENDED TO GIVE STUDENTS HANDS-ON EXPERIENCE IN THE WORKPLACE AND FOR WHICH THE STUDENTS DO NOT **TYPICALLY** RECEIVE A REGULAR SALARY OR WAGE FROM THE EMPLOYER; THIS INSTRUCTIONAL SETTING IS CHARACTERIZED BY:

- *ACTIVITIES THAT ARE AN INTEGRAL COMPONENT OF THE CURRICULUM OF THE PROGRAM AND ARE NECESSARY FOR THE COMPLETION OF THE PROGRAM.*

- *ACTIVITIES IN WHICH COLLEGE STAFF DO NOT DIRECTLY SUPERVISE STUDENTS AND FOR WHICH COLLEGE STAFF UNDERTAKE ONE OR MORE OF THE FOLLOWING ACTIVITIES:*

  - *MAKE PERIODIC SITE VISITS*

  - Ensure that assignments given to students and the work being done by students are suitable for the program

  - Monitor the students' progress in the field placement activity

  - Help address problems encountered by students in the field or work placement activity

  - Evaluate students' performance in the field or work placement activity

CO-OPERATIVE EDUCATION WORK PLACEMENT: EDUCATION AT WORK ONTARIO (WWW.EWO.CA), A REGIONAL ASSOCIATION OF THE CANADIAN ASSOCIATION FOR CO-OPERATIVE EDUCATION, DEFINES A CO-OP PROGRAM AS FOLLOWS:

> "A Co-operative Education Program is one that formally integrates a student's academic studies with work experience. The usual plan is for the student to alternate periods of experience in career-related fields according to the following criteria:

- Each work situation is approved by the Co-operative Education institution as a suitable learning situation

- The Co-operative Education student is engaged in productive work rather than merely observing

- The Co-operative Education student receives remuneration for the work performed
- The Co-operative Education student's progress on the job is monitored by the Co-operative Education institution
- The Co-operative Education student's performance on the job is supervised and evaluated by the student's employer
- The time spent in periods of work experience must be at least thirty percent of the time spent in academic study."

SMALL GROUP TUTORIAL: INSTRUCTIONAL ACTIVITY THAT MUST OCCUR IN SMALL GROUP SETTINGS (USUALLY 5-10 STUDENTS) AND IN WHICH INDIVIDUAL STUDENTS DO NOT REQUIRE ACCESS TO EQUIPMENT EXCEPT AS INDICATED BELOW:

- *SITUATIONS IN WHICH MICROCOMPUTER LABS ARE USED FOR THE INSTRUCTION OF STANDARD WORD PROCESSING, SPREADSHEET, AND DATABASE SOFTWARE PACKAGES*
- *SITUATIONS IN WHICH LABORATORIES AND WORKSHOPS ARE USED FOR CONVENIENCE*

Ontario

Ministry of Training, Colleges and Universities
Colleges of Applied Arts and Technology

Request for Approval for Funding Form

Pre-Health Project Members - Please complete highlighted areas.

☐ Request for new postsecondary program

☒ Request for modification to existing postsecondary program
Provide existing MTCU code and APS number: MTCU 41601 APS 01155
(Programs may need to migrate to this code)

College contact person responsible for this proposal: Name: E-Mail: Title: Telephone:

Program Information

College:
Program title: Pre-Health Sciences Pathway to Diplomas and Degrees
Program duration: 2 semesters
Proposed date of implementation: Enter Month and Year
Proposed Classification of Instructional Program Codes, formatted as 51.000. Health services/allied health/health sciences general This is a post-secondary program that prepares students for admission into health and sciences programs. *For additional information, please refer to most recent Classification of Instructional Programs (CIP) Canada published by Statistics Canada, available on http://www.statcan.gc.ca/.*
Projected four-digit National Occupational Classification Codes (3 maximum), formatted as ####: 1. 2. 3. *For additional information, please refer to most recent National Occupational Classification (NOC) Canada published by Statistics Canada, available on http://www.statcan.gc.ca/.*
Proposed annual tuition fee for this program (at implementation):

Attestation

I attest that the following six criteria have been evaluated and met for the proposed program: ☒ The Credentials Validation Service (CVS) has confirmed that the proposed program of

☐ Request for new postsecondary program

☒ Request for modification to existing postsecondary program

Provide existing MTCU code and APS number: MTCU 41601 APS 01155 (Programs may need to migrate to this code)

College contact person responsible for this proposal:	
Name:	E-Mail:
Title:	Telephone:

Program Information

College:
Program title: Pre-Health Sciences Pathway to Diplomas and Degrees
Program duration: 2 semesters
Proposed date of implementation: Enter Month and Year
Proposed Classification of Instructional Program Codes, formatted as 51.0000: Health services/allied health/health sciences general This is a post-secondary program that prepares students for admission into health and sciences programs. *For additional information, please refer to most recent Classification of Instructional Programs (CIP) Canada published by Statistics Canada, available on http://www.statcan.gc.ca/.*
Projected four-digit National Occupational Classification Codes (3 maximum), formatted as ####: 4. 5. 6. *For additional information, please refer to most recent National Occupational Classification (NOC) Canada published by Statistics Canada, available on http://www.statcan.gc.ca/.*
Proposed annual tuition fee for this program (at implementation):

Attestation

I attest that the following six criteria have been evaluated and met for the proposed program:

☒ The Credentials Validation Service (CVS) has confirmed that the proposed program of instruction conforms to the Credentials Framework and is consistent with accepted nomenclature or the program of instruction has been granted ministerial consent.

☒ There is either demonstrated, a) labour market and student demand, or b) societal need and student demand for the program.

☒ A relevant program advisory committee is in place and has recommended the program.

☒ The program content and delivery is and will be compliant with all requirements of regulatory bodies responsible for the field of study or other regulatory bodies related to the field of study.
Please list all applicable mandatory and those voluntary regulatory bodies considered relevant to the program: Not applicable
☒ The program meets the relevant program standards where they exist and essential employability skills and general education requirements.
☒ The board of governors and President has approved the program of instruction.

Other Attachments

Requirements for Ontario College Certificate, Diploma, Advanced Diploma, and Graduate Certificate:
☒ 1.1 Program Delivery Information (PDI) Section
☐ 1.2 High Demand Program Comparator Information Section (if seeking approval to charge a "high demand" tuition fee)
☒ 1.3 Strategic Mandate Agreement Alignment Section
☒ 1.4 Program Comparator Section
☒ 1.5 Credentials Validation Service Application for Program Validation and Validation Letter

Requirements for college baccalaureate degrees in an applied area of study:
☐ 1.1 Program Delivery Information (PDI) Section
☐ 1.2 High Demand Program Comparator Information Section

For college baccalaureate degrees in an applied area of study, please see the Directives and Guidelines for Applying for Ministerial Consent under the Post-secondary Education Choice and Excellence Act, 2000 for the complete submission requirements for applicants, the consent process and the policy considerations that inform the Minister's decisions.

_____ _____

Name: Date
President

This application must be approved and signed by the college President in order to be considered complete.

Send one complete copy of this submission to: PSEprogramsubmissions@ontario.ca. For further information, contact: College Program Approvals, Colleges Unit, Ministry of Training, Colleges and Universities, Mowat Block, 7th Floor, 900 Bay Street, Toronto, ON M7A 1L2 (416-325-2887).

1.1 Program Delivery Information (PDI) Section

Total Hours per Student

College:	Program title: Pre-Health Sciences Pathway to Diplomas and Degrees

Indicate the number of hours that a student is required to spend in each instructional setting in each semester or level of this program. All hours in all instructional settings are to be noted.

** SAMPLE hours for a 14-week schedule

Funded Instructional Settings*	**Semester/Level**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
Classroom instruction	**234**	**238**								**472**
Laboratory/workshop/ fieldwork	**42**	**56**								**98**
Independent (self-paced) learning										
One-on-one instruction										
Clinical placement										
Field placement/work placement										
Small group tutorial										
TOTAL	**276**	**294**								**570**

** SAMPLE hours for a 15-week schedule

Funded Instructional Settings*	**Semester/Level**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
Classroom instruction	**250**	**260**								**510**
Laboratory/workshop/ fieldwork	**45**	**60**								**105**
Independent (self-paced) learning										
One-on-one instruction										

Clinical placement										
Field placement/work placement										
Small group tutorial										
TOTAL	**295**	**320**								**615**

Non-funded Instructional Settings*	**Semester/Level**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Total**
Co-op work placement - Mandatory										
Co-op work placement - Optional										
TOTAL										

*Definitions for each instructional setting can be found in Appendix A.

1.2 High Demand Program* Comparator Information Section

Annual Tuition Fees based on two-semester year

College:	Program title:
Proposed annual tuition fee for this program: $	

If this program is high demand, please provide comparator information**. Please note you must use a program at another college as a comparator.

MTCU Code	College	Program Name	Tuition Fee
			$
			$
			$
			$
			$

***Definition of high demand program** (formerly "additional cost recovery" or ACR): a program of instruction eligible for general purpose operating grant funding for which colleges have the discretion to charge fees above the maximum permitted for regular-fee programs. This discretion is allowed for applied degree, post-basic or Baccalaureate of Nursing programs and/or for basic programs which have been determined to meet each of the following three criteria: 1) there is high demand for instructional space; 2) graduates have above-average prospects for employment; and 3) graduates have the potential to earn an above-average income.

All post-basic, college baccalaureate degrees in an applied area of study and Baccalaureate of Nursing programs are automatically considered high demand. Basic programs are considered high demand if they satisfy the above 3 criteria.

****Comparator tuition fee should not include ancillary fees** and can be found here: http://caat.edu.gov.on.ca/HTMLpages/Finance_Eng.html

If no comparator program exists, please refer to the Tuition and Ancillary Fees Operating Procedure, the Guidelines for the Implementation of the Tuition Fee Policy for Colleges of Applied Arts and Technology. For further assistance, please contact the Ministry of Training, Colleges and Universities, Colleges Finance Unit at 416-325-5426.

1.3 Strategic Mandate Agreement (SMA) Alignment Section

** SAMPLE ONLY – Please complete for your college.

Section A *(Required for Expedited and Full Review)*

Please indicate the program area of strength or growth identified in your college's signed SMA to which this program approval request aligns.

It aligns with Health and pathways to degrees, as it prepares students with the pre-requisite admission requirements for entry into health and or degree programs of study.

Please explain how this program is aligned with the indicated program area of strength or growth. *(150 words recommended maximum)*

Currently Georgian offers a Pre-Health program with approximately 650 students. This proposal is to align our current program with the proposed new learning outcomes for the advanced stream from the Pre-Health ONCAT project.

Does your college's SMA note that further discussion or information would be required during approvals?

☐ Yes ☒ No

If yes, please complete Section B.

Section B *(Required for Full Review only)*

Please include the relevant note from your college's SMA that indicates further discussion or information is required.

Please outline a rationale, including evidence, to support the consideration of this program approval request. (*400 words recommended maximum*)

Pre-Health Sciences Programs are two semester post-secondary programs that prepare students to be admitted and to be successful in Health Sciences programs at either the diploma or the degree level of studies offered at colleges and universities. The applicants to these programs are students who do not meet the admission requirements for Health Science programs generally because they have not completed the required high school science and math requirements or achieved the required grades for entry.

All twenty-four colleges in Ontario offer a Pre-Health Sciences Programs using a variety of titles. Some programs were explicitly designed for admission to diploma studies, and some for admission to degree level studies particularly nursing; still other programs appear to prepare for admission to both levels. As a result of this diversity of nomenclature and purpose which has led to confusion both for applicants and receiving Health Sciences Programs, an ONCAT Pre-Health project was initiated in 2012-13. This project resulted in the development of two levels of program outcomes and two program descriptions: 1. Pre-Health Sciences Pathway to Certificates and Diplomas and 2. Pre-Health Sciences Pathway to Diplomas and Degrees. Colleges may choose to offer one or both programs.

For background and evidence please refer to the report of the Heads of Health Sciences Pre-Health Sciences project July 17, 2013.

Please provide evidence that a relevant program advisory committee has recommended the program. Include attachments as required. (400 words recommended maximum)

The ONCAT Pre-Health Sciences project has had the support of the Vice-Presidents Academic, Heads of Health Sciences and Heads of Interdisciplinary Studies Coordinating Committees of the colleges. In addition 21 colleges have indicated their intent to offer one or both of the programs; two other colleges are currently reviewing their pre-health programs and will make a decision regarding implementation at the end of those processes.

1.4 Program Comparator Section

Sample ONLY – Complete with information from your college. Sample information listed below.

Key Performance Indicators (KPIs)

Please complete this table with the three most recent years of published data* for similar programs at your college only (minimum one, maximum three). Similar programs may include programs at the same or different credential levels, and transfer opportunities. Please add additional rows as needed.

Program		Academic Year Of Graduation	2011-2012	2012-2013	2013-2014
MTCU Title	MTCU Code				
		Graduate Count			
		Employment Rate**	NA	NA	NA
		Employment Rate in a Related Field***	NA	NA	NA

*KPIs are to be calculated in accordance with the methods prescribed by MTCU. KPIs are based on graduates of MTCU approved full-time postsecondary programs whose funding status is shown in the graduate record layout as MTCU operating grant, Co-op Diploma Apprenticeship or Second Career, and who were surveyed by telephone.

** Employment Rate = (number of survey respondents employed Full-time or part-time, related or unrelated) / (number of survey respondents in labour force)

*** Employment Rate in a Related Field = (number of survey respondents employed Full-time or part-time, related) / (number of survey respondents in labour force)

Additional explanation/information that contextualizes the KPI outcomes above, such as student demand or labour market analysis, may be provided. (400 words recommended maximum)
Depending on the admitting program, students from Pre-Health programs may not require full credential in order to gain admission into some health programs. For example some Practical nursing programs only require the math, chemistry and/or biology and not the Pre-health graduate certificate.

How many other colleges within your region are approved for funding to offer programs in this same MTCU code?
Enter number of colleges in your region offering Pre-Health program

*Please refer to the APS-MTCU Table available on the CAAT Extranet Site, in the Programs Section, for a complete list of programs approved for funding through the College Funding Framework, at http://caat.edu.gov.on.ca/ (user name: caatsite; password: 900Mowat).

1.5 Credentials Validation Service Application for Program Validation and Validation Letter

Please note that the Ministry is requesting that colleges now submit all program documentation for a program funding approval request directly to the Ministry.

Please append the following documentation to this application:

3. Credentials Validation Service Validation (CVS) Letter
4. Credentials Validation Service Application for Program Validation

APPENDIX A

Instructional Settings

THE FOLLOWING DEFINITIONS ARE TO BE USED BY COLLEGES WHEN COMPLETING THE PROGRAM DELIVERY INFORMATION TO CALCULATE PROGRAM FUNDING PARAMETERS FORM REQUIRED FOR MINISTRY-FUNDED PROGRAMS OF INSTRUCTION

CLASSROOM INSTRUCTION: INSTRUCTION THAT MAY BE PROVIDED IN A SETTING IN WHICH INDIVIDUALS DO NOT REQUIRE ACCESS TO EQUIPMENT, EXCEPT AS LISTED BELOW:

- *SITUATIONS IN WHICH MICROCOMPUTER LABS ARE USED FOR INSTRUCTION IN STANDARD WORD PROCESSING, SPREADSHEET, AND DATABASE SOFTWARE PACKAGES*
- *"TRADITIONAL" CLASSROOMS AND LECTURE HALLS*
- *"VIRTUAL" CLASSROOMS USED IN ON-LINE LEARNING*
- *SITUATIONS IN WHICH LABORATORIES AND WORKSHOPS MAY BE USED FOR CONVENIENCE*

LABORATORIES/WORKSHOPS/FIELDWORK: SCHEDULED HOURS OF ACTIVITIES INTENDED TO GIVE STUDENTS HANDS-ON EXPERIENCE; THIS INSTRUCTIONAL SETTING IS CHARACTERIZED BY:

- *ACTIVITIES IN WHICH STUDENTS ARE PROVIDED WITH INSTRUCTION AND ARE DIRECTLY SUPERVISED BY COLLEGE STAFF.*
- *SETTINGS EITHER INSIDE COLLEGE FACILITIES (E.G., LABORATORIES, WORKSHOPS) OR OUTSIDE COLLEGE FACILITIES (E.G., FIELDWORK) IN WHICH INDIVIDUAL STUDENTS ARE REQUIRED TO USE INSTRUCTIONAL EQUIPMENT AND/OR SUPPLIES. THESE SETTINGS DO NOT INCLUDE SITUATIONS IN WHICH MICROCOMPUTER LABS ARE USED FOR INSTRUCTION OF STANDARD WORD PROCESSING, SPREADSHEET, AND DATABASE SOFTWARE PACKAGES OR SITUATIONS IN WHICH LABORATORIES AND WORKSHOPS ARE USED FOR CONVENIENCE.*

INDEPENDENT (SELF-PACED) LEARNING: STUDENT DIRECTED LEARNING IN WHICH CONTACT WITH COLLEGE STAFF IS LIMITED TO SITUATIONS IN WHICH ADVICE OR SOLUTIONS TO SPECIFIC PROBLEMS IS SOUGHT; **USUALLY ONLINE LEARNING.**

ONE-ON-ONE INSTRUCTION: THOSE EXCEPTIONAL SITUATIONS IN WHICH COLLEGE ACADEMIC STAFF CAN PROVIDE INSTRUCTION TO ONLY ONE STUDENT AT A TIME, **E.G. IN A FLIGHT SIMULATOR OR ON TOP OF AN ELECTRICAL TOWER.**

CLINICAL PLACEMENT: SCHEDULED HOURS OF ACTIVITIES INTENDED TO GIVE STUDENTS HANDS-ON EXPERIENCE IN A HOSPITAL OR HEALTH CARE SETTING; THIS INSTRUCTIONAL SETTING IS CHARACTERIZED BY:

- *ACTIVITIES THAT ARE AN INTEGRAL COMPONENT OF THE CURRICULUM OF THE PROGRAM AND NECESSARY FOR THE SUCCESSFUL COMPLETION OF THE PROGRAM.*

- *ACTIVITIES IN WHICH STUDENTS ARE CONTINUALLY SUPERVISED DIRECTLY BY COLLEGE STAFF OR INDIVIDUALS WORKING ON BEHALF OF THE COLLEGE.*

FIELD PLACEMENT/WORK PLACEMENT: SCHEDULED HOURS OF ACTIVITIES INTENDED TO GIVE STUDENTS HANDS-ON EXPERIENCE IN THE WORKPLACE AND FOR WHICH THE STUDENTS DO NOT **TYPICALLY** RECEIVE A REGULAR SALARY OR WAGE FROM THE EMPLOYER; THIS INSTRUCTIONAL SETTING IS CHARACTERIZED BY:

- *ACTIVITIES THAT ARE AN INTEGRAL COMPONENT OF THE CURRICULUM OF THE PROGRAM AND ARE NECESSARY FOR THE COMPLETION OF THE PROGRAM.*

- *ACTIVITIES IN WHICH COLLEGE STAFF DO NOT DIRECTLY SUPERVISE STUDENTS AND FOR WHICH COLLEGE STAFF UNDERTAKE ONE OR MORE OF THE FOLLOWING ACTIVITIES:*

  - *MAKE PERIODIC SITE VISITS*

  - Ensure that assignments given to students and the work being done by students are suitable for the program

  - Monitor the students' progress in the field placement activity

  - Help address problems encountered by students in the field or work placement activity

  - Evaluate students' performance in the field or work placement activity

CO-OPERATIVE EDUCATION WORK PLACEMENT: EDUCATION AT WORK ONTARIO (WWW.EWO.CA), A REGIONAL ASSOCIATION OF THE CANADIAN ASSOCIATION FOR CO-OPERATIVE EDUCATION, DEFINES A CO-OP PROGRAM AS FOLLOWS:

> "A Co-operative Education Program is one that formally integrates a student's academic studies with work experience. The usual plan is for the student to alternate periods of experience in career-related fields according to the following criteria:

- Each work situation is approved by the Co-operative Education institution as a suitable learning situation

- The Co-operative Education student is engaged in productive work rather than merely observing

- The Co-operative Education student receives remuneration for the work performed
- The Co-operative Education student's progress on the job is monitored by the Co-operative Education institution
- The Co-operative Education student's performance on the job is supervised and evaluated by the student's employer
- The time spent in periods of work experience must be at least thirty percent of the time spent in academic study."

SMALL GROUP TUTORIAL: INSTRUCTIONAL ACTIVITY THAT MUST OCCUR IN SMALL GROUP SETTINGS (USUALLY 5-10 STUDENTS) AND IN WHICH INDIVIDUAL STUDENTS DO NOT REQUIRE ACCESS TO EQUIPMENT EXCEPT AS INDICATED BELOW:

- *SITUATIONS IN WHICH MICROCOMPUTER LABS ARE USED FOR THE INSTRUCTION OF STANDARD WORD PROCESSING, SPREADSHEET, AND DATABASE SOFTWARE PACKAGES*
- *SITUATIONS IN WHICH LABORATORIES AND WORKSHOPS ARE USED FOR CONVENIENCE*

APPLICATION FORM FOR PROGRAM PROPOSAL

Pre-Health Sciences Pathway to Certificates and Diplomas

College Pre-Health Project Members - Please complete highlighted areas.

A. Funding Request: This proposal will be sent to the MTCU for Approval for Funding.
☒Yes

☐No

B. College Name: Click here to enter College Name

C. College Contact(s): Person responsible for this proposal.

Name: Click here to enter text.	**Name**:
Title:	**Title**:
Telephone:	**Telephone**:
E-mail:	**E-mail**:

D. Proposed Program Title: Pre-Health Sciences Pathway to Certificates and Diplomas

E. Proposed Credential: Please select one (1).
☐Local Board Approved Certificate
☒Ontario College Certificate
☐Ontario College Diploma
☐Ontario College Advanced Diploma
☐Ontario College Graduate Certificate

F. Program Maps (Appendix A): Please complete and attach the two (2) Program Maps.
Form 1- Vocational Program Learning Outcomes
Form 2- Essential Employability Skills Outcomes

G. Program Description (Appendix B): Please complete and attach the Program Description Form.

H. Program Curriculum (Appendix C): Please complete and attach the Program Curriculum Form.

I. Regulatory Status Form (Appendix D): Please complete and attach the Regulatory Status Form.

J. Date of Submission to CVS: March 27, 2015

FOR CVS USE ONLY

K. Date of CVS Response: Click here to enter a date.

L. CVS Validation Decision:
☐Proposal Validated. APS Number:
Reason:

☐Proposal not Validated. Reason:
M. CVS Signature:

Send the completed form and required appendices to: belfer@ocqas.org. For detailed information on how to complete the *Application Form for Program Proposal*, please refer to the *Instructions for Submission of Program Proposal* document at www.ocqas.org.

INTRODUCTION

The process established by the Credentials Validation Service (CVS) is designed to be a streamlined, seamless, effective, and efficient process that will allow colleges to submit and receive validation requests and decisions in a timely manner. The document with the instructions to complete this form (*CVS Instructions for Submission of Program Proposal*) is available to all colleges on the OCQAS website (www.ocqas.org).

F. PROGRAM MAPS (APPENDIX A): Form 1 - Vocational Program Learning Outcomes

Column 1 **Provincial Vocational Program Outcomes** ☒ Provincial Program Standard, *or* ☐ Provincial Program Description *MTCU code*: Use the MTCU code for your current program – i.e., 41601 if offered as Pre-Health Sciences or 44700 if offered as GAS	**Column 2** **Proposed Program Vocational Learning Outcomes**	**Column 3** **Course Title / Course Code** **Please complete ONLY Column 3 – i.e., enter the Course Title and Course Code for the courses at your institution that will meet the learning outcomes in Column 2. You may enter multiple courses if that is how your curriculum is constructed.**
Discuss and analyze biological concepts and systems of human biology, specifically cells, tissues and organ systems, and identify their relation to homeostasis, health, wellness and the human body.	Discuss and analyze biological concepts and systems of human biology, specifically cells, tissues and organ systems, and identify their relation to homeostasis, health, wellness and the human body.	Courses listed below are for example only; enter course titles and codes for your institution Biology for life sciences; BIOL1200
Discuss the fundamental concepts of chemistry, specifically the properties of matter and organic compounds, and apply them to processes and applications related to health, wellness and the human body.	Discuss the fundamental concepts of chemistry, specifically the properties of matter and organic compounds, and apply them to processes and applications related to health, wellness and the human body.	Chemistry for life sciences CHEM1050
Apply concepts of mathematics and statistics to interpret health care data and solve typical mathematical problems in health care and related science professions.	Apply concepts of mathematics and statistics to interpret health care data and solve typical mathematical problems in health care and related science professions.	Math for Science and Technology MATH 1007

Communicate clearly, concisely, and correctly in written, spoken, and visual form using language and terminology appropriate and relevant to health and other science-related fields.	Communicate clearly, concisely, and correctly in written, spoken, and visual form using language and terminology appropriate and relevant to health and other science-related fields	Scientific and Technical Communications COMM 1050
Investigate future careers in health sciences and other high affinity fields and identify appropriate postsecondary programs to prepare for chosen career	Investigate future careers in health sciences and other high affinity fields and identify appropriate postsecondary programs to prepare for chosen career	Scientific and Technical Communications COMM 1050 Education and Career Planning EDCP 1010
Discuss strategies for ongoing personal and professional development.	Discuss strategies for ongoing personal and professional development.	Education and Career Planning EDCP 1010

Add additional rows as required to complete the mapping exercise for the program as you intend to offer it.

F. PROGRAM MAPS (APPENDIX A): Form 2 – Essential Employability Skills Outcomes

Skill Categories	Defining Skills Skill areas to be demonstrated by the graduates	Essential Employability Skills Outcomes The graduate has reliably demonstrated the ability to:	Course Title / Course Codes (*As indicated in Appendix A*)
Communication	• Reading • Writing • Speaking • Listening • Presenting • Visual Literacy	• communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils the purpose and meets the needs of the audience	Complete mapping to identify the courses in which each outcome will be achieved. Enter multiple courses if that is how your curriculum is constructed. E.G. Scientific and Technical Communications COMM 1050
		• respond to written, spoken, or visual messages in a manner that ensures effective communication	Scientific and Technical Communications COMM 1050
Numeracy	• Understanding and applying mathematical concepts and reasoning • Analysing and using numerical data	• execute mathematical operations accurately 6. 7.	

Skill Categories	Defining Skills Skill areas to be demonstrated by the graduates	Essential Employability Skills Outcomes The graduate has reliably demonstrated the ability to:	Course Title / Course Codes (*As indicated in Appendix A*)
	• Conceptualizing		
Critical Thinking & Problem Solving	• Analysing • Synthesizing • Evaluating • Decision-making • Creative and innovative thinking	• apply a systematic approach to solve problems	
		• use a variety of thinking skills to anticipate and solve problems 8.	
Information Management	• Gathering and managing information • Selecting and using appropriate tools and technology for a task or a project • Computer literacy • Internet skills	• locate, select, organize, and document information using appropriate technology and information systems	
		• analyse, evaluate, and apply relevant information from a variety of sources	
Inter-personal	• Team work • Relationship management • Conflict resolution • Leadership • Networking	• show respect for the diverse opinions, values, belief systems, and contributions of others	
		• interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals	

Skill Categories	Defining Skills Skill areas to be demonstrated by the graduates	Essential Employability Skills Outcomes The graduate has reliably demonstrated the ability to:	Course Title / Course Codes (*As indicated in Appendix A*)
Personal	• Managing self • Managing change and being flexible and adaptable • Engaging in reflective practice • Demonstrating personal responsibility	• manage the use of time and other resources to complete projects	
		• take responsibility for one's own actions, decisions, and consequences	

G. PROGRAM DESCRIPTION (APPENDIX B)

Program Description

Provide a brief description of the program, similar to what might be used as, or found in, advertising or a calendar description.

This program is designed to prepare graduates for admission to Ontario College Certificate and Diploma programs at Ontario Colleges of Applied Arts and Technology in the health sciences or other related programs in the biological or chemical sciences. The program provides students with the knowledge and skills in communication, mathematics, human anatomy, biology and chemistry needed to be successful in health and science-related college programs. In addition, the program provides students with the opportunity to learn about potential careers in the health sciences and to identify other college programs focusing on the biological or chemical sciences that will enable them to achieve their career objectives.

This is a two-semester certificate-level program leading to an Ontario College Certificate.

Laddering Opportunities

Provide a brief description of known laddering into and from the proposed program, e.g. certificate to diploma, diploma to degree, apprenticeship to college, diploma to apprenticeship, college to college, diploma to college degree, etc.

It is expected that graduates of the "Pre-Health Sciences Pathway to Certificates and Diplomas" program will be eligible to apply for admission to multiple health and/or science programs in Ontario Colleges of Applied Arts and Technology at the certificate or diploma level.

Occupational Areas

Provide a brief description of where it is anticipated graduates will find employment.

Upon successful completion of the program, the student will be eligible to apply for admission to the first year of a health and/or science-related certificate or diploma program at an Ontario College of Applied Arts and Technology. The curriculum has been designed to meet subject-specific entrance requirements. Successful completion of the program does not guarantee entry into any specific program.

Proposed Program Vocational Learning Outcomes

Provide the list of the proposed program vocational learning outcomes. These outcomes should be listed, verbatim as they appear in Appendix A- Form 1.

***The graduate has reliably demonstrated the ability to*:**

- Discuss and analyze biological concepts and systems of human biology, specifically cells, tissues and organ systems, and identify their relation to homeostasis, health, wellness and the human body.;

- Discuss the fundamental concepts of chemistry, specifically the properties of matter and organic compounds, and apply them to processes and applications related to health, wellness and the human body.
- Apply concepts of mathematics and statistics to interpret health care data and solve typical mathematical problems in health care and related science professions.
- Communicate clearly, concisely, and correctly in written, spoken, and visual form using language and terminology appropriate and relevant to health and other science-related fields.
- Investigate future careers in health sciences and high affinity fields and identify appropriate postsecondary programs to prepare for chosen career
- Discuss strategies for ongoing personal and professional development.

Admission Requirements

Identify the Admission Requirements for the program.

Minimum admission requirements for this program include:

- OSSD or equivalent or mature student status.

Please refer to each college for specific admission information.

H. PROGRAM CURRICULUM (APPENDIX C)

****These course descriptions are the exemplar descriptions. Colleges must update with information specific to the program at their institution. Course Codes and Titles must align with ONCAT exemplar course descriptions (listed below).**

Semester	**Course Code/ Course Title** (*As indicated in Appendix A*)	**General Education Course** *(indicate with an X)*	**Total Course Hours**	**Course Description**
1 and/or 2	BIOLXXXX / Biology for Health Sciences - Standard		Approx. 90 hours	This course will introduce the student to the basic concepts of biology, both general and human. The course begins with an overview of life and biological systems. This is followed by an introduction to human biology as it relates to health and wellness. Emphasis is placed on organization of the body into cells, tissues and organ systems. Topics include characteristics, classification and organization of life, cell structure and function, homeostasis, anatomy and physiology of human organ systems, immune function, and an introduction to infectious organisms. By the end of the course, students will have an appreciation of the complexity of the human body and its functions.
1 and/or 2	CHEMXXXX / Chemistry for Health Sciences - Standard		Approx. 90 hours	In Chemistry for Health Sciences, students will learn the fundamentals of chemistry with real life examples and apply them in processes and applications that relate to health care fields. The concepts studied will include the study of matter and chemical bonding, quantities in chemical reactions, solutions and solubility, acids and bases. Students will also develop an understanding of organic compounds- their nomenclature, structure, properties based on intermolecular forces and reactions. These topics will have a strong health science emphasis and will provide students with a chemistry perspective of health and the human body. The chemistry concepts will continually highlight the connections of chemistry with health, medicine and research areas.

1 and/or 2	MATHXXXX / Math for Health Sciences - Standard		Approx. 90 hours	By the end of this course, students will have demonstrated the ability to evaluate a variety of arithmetic and algebraic expressions and apply these principles to typical problems that arise in the health care fields. Concepts studied include numeracy fundamentals; systems of measurement and dimensional analysis; algebra, with an emphasis on analytical techniques; and evaluating systems of linear equations. Students will develop essential critical thinking and problem-solving skills through exposure to application problems, including dosage calculations, solution dilutions, concentrations, and pH. Students will use numerical methods along with graphs, charts, and tables to effectively describe data, calculate the empirical and theoretical probability of simple events using key rules of probability, and apply descriptive and inferential statistics to applications from the health care fields.
1 and/or 2	COMMXXXX / Communications		Determined by college.	Determined by college.
1 and/or 2	GNEDXXXX / General Education	X	Determined by college.	Determined by college.
1 and/or 2	Other Course Offerings		Determined by college.	Determined by college.

Add additional rows as required to complete the curriculum chart.

I. REGULATORY STATUS FORM (APPENDIX D)

Please complete the following:

There IS a legislative requirement that program graduates must be certified or licensed by a regulatory authority to practice or work in the occupation

☐ **Mandatory recognition of a regulatory authority exists and is being sought.**
(Please refer to Section A below- *Mandatory Regulatory Requirements*)

There IS or IS NOT a voluntary (i.e., not required by legislation) licensing or certification for entry to practice in the profession or trade.

☐ YES
☒ NO

☐ **Voluntary recognition of a regulatory authority IS being sought.**
(Please refer to Section B below- *Recognition by Voluntary Association*)

☒ **Voluntary recognition is NOT being sought***.
Please explain why: No regulatory organization.

*Note: *There may be titling implications for programs that are not seeking recognition in an area where existing programs have secured recognition.*

A. MANDATORY REGULATORY REQUIREMENTS

Where licensing or certification is ***required by legislation*** for entry to practice in the profession or trade, the Ministry of Training, Colleges and Universities requires that colleges ensure that their programs will meet the requirements of the regulatory body in order to be approved for funding.

Name of regulatory authority:

Status (please select ALL that apply)

☐ Accreditation or approval by the regulatory authority / designated third party received.
Date of recognition:

☐ The college is working toward accreditation with the regulatory authority/ designated third party.
Describe current status of application:
Expected date of recognition:

☐ The regulatory authority does not accredit educational programs directly or through designated third party. Formal acknowledgement (e.g. in its published or legislated registration requirements) that the program graduates will be eligible to write any required certifying or registration exam(s) or that the program is otherwise recognized for the purposes of certifying or registering a graduate is being sought.

Please submit an acknowledgement and/or evidence from the regulatory authority regarding the status of the recognition.

B. RECOGNITION BY VOLUNTARY ASSOCIATION

Colleges may choose to have a program accredited or recognized by a voluntary membership organization or association. Graduate eligibility for association recognition or adherence to standards imposed by the body is ***a recommendation and not a requirement*** for program funding approval by the Ministry of Training, Colleges and Universities.

Name of voluntary association:

Status (please select ALL that apply)

☐ The college is working toward recognition.
Describe current status of application:
Expected date of recognition:

☐ Recognition has been received.
Date of recognition:
Type of recognition (e.g. accreditation, graduates eligible to write membership exams, etc.):

☐ The association does not recognize educational programs directly or through designated third party. Formal recognition (e.g. in its published requirements) that the program graduates will be eligible to write any required certifying or registration exam(s) or that the program is otherwise recognized for the purposes of certifying or registering a graduate is being sought.

Please submit an acknowledgement and/or evidence from the regulatory authority or voluntary association regarding the status of the recognition.

APPLICATION FORM FOR PROGRAM PROPOSAL

Pre-Health Sciences Pathway to Diplomas and Degrees

College Pre-Health Project Members - Please complete highlighted areas.

A. Funding Request: This proposal will be sent to the MTCU for Approval for Funding.
☒Yes

☐No

B. College Name: Click here to enter College Name

C. College Contact(s): Person responsible for this proposal.

Name: Click here to enter text.	**Name**:
Title:	**Title**:
Telephone:	**Telephone**:
E-mail:	**E-mail**:

D. Proposed Program Title: Pre-Health Sciences Pathway to Diplomas and Degrees

E. Proposed Credential: Please select one (1).
☐Local Board Approved Certificate
☒Ontario College Certificate
☐Ontario College Diploma
☐Ontario College Advanced Diploma
☐Ontario College Graduate Certificate

F. Program Maps (Appendix A): Please complete and attach the two (2) Program Maps.
Form 1- Vocational Program Learning Outcomes
Form 2- Essential Employability Skills Outcomes

G. Program Description (Appendix B): Please complete and attach the Program Description Form.

H. Program Curriculum (Appendix C): Please complete and attach the Program Curriculum Form.

I. Regulatory Status Form (Appendix D): Please complete and attach the Regulatory Status Form.

J. Date of Submission to CVS: March 27, 2015

FOR CVS USE ONLY

K. Date of CVS Response: Click here to enter a date.

L. CVS Validation Decision:
☐Proposal Validated. APS Number:
Reason:
☐Proposal not Validated.
Reason:

M. CVS Signature:

Send the completed form and required appendices to: belfer@ocqas.org. For detailed information on how to complete the *Application Form for Program Proposal*, please refer to the *Instructions for Submission of Program Proposal* document at www.ocqas.org.

INTRODUCTION

The process established by the Credentials Validation Service (CVS) is designed to be a streamlined, seamless, effective, and efficient process that will allow colleges to submit and receive validation requests and decisions in a timely manner. The document with the instructions to complete this form (*CVS Instructions for Submission of Program Proposal*) is available to all colleges on the OCQAS website (www.ocqas.org).

F. PROGRAM MAPS (APPENDIX A): Form 1 - Vocational Program Learning Outcomes

Column 1 **Provincial Vocational Program Outcomes** ☒ Provincial Program Standard, *or* ☒ Provincial Program Description *MTCU code*: Use the MTUC code for your program, i.e., use 41601 if offered as Pre-Health Sciences or 44700 if offered as GAS	**Column 2** **Proposed Program Vocational Learning Outcomes**	**Column 3** **Course Title / Course Code** **Important Information: Please complete ONLY Column 3 – i.e., enter the Course Title and Course Code for the courses at your institution that will meet the learning outcomes in Column 2**
Analyze biological concepts such as homeostasis and apply them to the study of human anatomy and physiology.	Analyze biological concepts such as homeostasis and apply them to the study of human anatomy and physiology.	Courses listed below are for example only; enter course titles and codes for your institution Biology for life sciences; BIOL1100
Analyze key concepts and principles of general and organic chemistry, and explain the impact of chemical reactions and biochemistry on the human body.	Analyze key concepts and principles of general and organic chemistry, and explain the impact of chemical reactions and biochemistry on the human body.	Chemistry for life sciences CHEM1150
Analyze appropriate mathematical concepts to solve typical health-field-related calculations and apply concepts of probability, descriptive and inferential statistics to interpret health and science-related data.	Analyze appropriate mathematical concepts to solve typical health-field-related calculations; and apply concepts of probability, descriptive and inferential statistics to interpret health and science-related data.	Math for Science and Technology MATH 1007
Communicate clearly, concisely, and correctly in written, spoken, and visual form using language and terminology appropriate and relevant to health and other science-related fields.	Communicate clearly, concisely, and correctly in written, spoken, and visual form using language and terminology appropriate and relevant to health and other science-related fields.	Scientific and Technical Communications COMM 1050

OPTIONAL Physics VLO Analyze the fundamental laws of physics and discuss how they apply to human health and wellness.	OPTIONAL Physics VLO Analyze the fundamental laws of physics and discuss how they apply to human health and wellness.	Physics for Life Sciences PHYS 1000 Leave blank if your college does not plan to offer Physics as part of the program
Investigate future careers in health sciences and other high affinity fields and identify appropriate postsecondary programs to prepare for chosen career.	Investigate future careers in health sciences and other high affinity fields and identify appropriate postsecondary programs to prepare for chosen career.	Scientific and Technical Communications COMM 1050 Education and Career Planning EDCP 1010
Discuss strategies for ongoing personal and professional development.	Discuss strategies for ongoing personal and professional development.	Education and Career Planning EDCP 1010

Add additional rows as required to complete the mapping exercise for the program as you intend to offer it.

F. PROGRAM MAPS (APPENDIX A): Form 2 – Essential Employability Skills Outcomes

Skill Categories	**Defining Skills** Skill areas to be demonstrated by the graduates	**Essential Employability Skills Outcomes** The graduate has reliably demonstrated the ability to:	**Course Title / Course Codes** (*As indicated in Appendix A*)
Communication	• Reading • Writing • Speaking • Listening • Presenting • Visual Literacy	• communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils the purpose and meets the needs of the audience	Complete mapping to identify the courses in which each outcome will be achieved. Enter multiple courses if that is how your curriculum is constructed. E.G. Scientific and Technical Communications COMM 1050
		• respond to written, spoken, or visual messages in a manner that ensures effective communication	Scientific and Technical Communications COMM 1050
Numeracy	• Understanding and applying mathematical concepts and reasoning • Analysing and using numerical data • Conceptualizing	• execute mathematical operations accurately	
Critical Thinking & Problem Solving	• Analysing • Synthesizing • Evaluating • Decision-making • Creative and innovative thinking	• apply a systematic approach to solve problems	

Skill Categories	Defining Skills Skill areas to be demonstrated by the graduates	Essential Employability Skills Outcomes The graduate has reliably demonstrated the ability to:	Course Title / Course Codes (*As indicated in Appendix A*)
		• use a variety of thinking skills to anticipate and solve problems	
Information Management	• Gathering and managing information • Selecting and using appropriate tools and technology for a task or a project • Computer literacy • Internet skills	• locate, select, organize, and document information using appropriate technology and information systems	
		• analyse, evaluate, and apply relevant information from a variety of sources	
Inter-personal	• Team work • Relationship management • Conflict resolution • Leadership • Networking	• show respect for the diverse opinions, values, belief systems, and contributions of others	
		• interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals	
Personal	• Managing self • Managing change and being flexible and adaptable • Engaging in reflective practice • Demonstrating personal responsibility	• manage the use of time and other resources to complete projects	
		• take responsibility for one's own actions, decisions, and consequences	

Skill Categories	**Defining Skills** Skill areas to be demonstrated by the graduates	**Essential Employability Skills Outcomes** The graduate has reliably demonstrated the ability to:	**Course Title / Course Codes** (*As indicated in Appendix A*)

G. PROGRAM DESCRIPTION (APPENDIX B)

Program Description

Provide a brief description of the program, similar to what might be used as, or found in, advertising or a calendar description.

This program is designed to provide students with the core knowledge, skills and abilities fundamental to academic success in health sciences and other high affinity programs at the diploma, advanced diploma or degree level. Students will develop their knowledge and skills in communication, mathematics, human anatomy, biology, (Insert physics if your program will include it) and organic/inorganic chemistry so they are well-prepared for the rigours of their next academic program. In addition, the program provides students with the opportunity to learn about potential careers in the health sciences and to identify other programs focusing on the biological or chemical sciences that will enable them to achieve their career objectives.

This is a two-semester certificate-level program leading to an Ontario College Certificate.

Laddering Opportunities

Provide a brief description of known laddering into and from the proposed program, e.g. certificate to diploma, diploma to degree, apprenticeship to college, diploma to apprenticeship, college to college, diploma to college degree, etc.

It is expected that graduates of the 'Pre-Health Sciences Pathway to Diplomas and Degrees program will be eligible to apply for admission to multiple health and/or science programs at the diploma or advanced diploma level at an Ontario College of Applied Arts and Technology and to many health and/or science programs at the degree level at an Ontario college or university. The curriculum has been designed to meet subject-specific entrance requirements. Successful completion of the program does not guarantee entry into any specific program.

Occupational Areas

Provide a brief description of where it is anticipated graduates will find employment.

Upon successful completion of the program, the student will be eligible to apply for admission to the first year of a health and/or science-related diploma, advanced diploma or degree program at an Ontario College of Applied Arts and Technology and to many health or science related degree programs at Ontario universities. The curriculum has been designed to meet subject-specific entrance requirements. Successful completion of the program does not guarantee entry into any specific program.

Proposed Program Vocational Learning Outcomes

Provide the list of the proposed program vocational learning outcomes. These outcomes should be listed, verbatim as they appear in Appendix A- Form 1.

***The graduate has reliably demonstrated the ability to*:**

- Analyze biological concepts such as homeostasis and apply them to the study of human anatomy and physiology. ;

- Analyze key concepts and principles of general and organic chemistry, and explain the impact of chemical reactions and biochemistry on the human body.
- Analyze appropriate mathematical concepts to solve typical health-field-related calculations and apply concepts of probability, descriptive and inferential statistics to interpret health and science-related data.
- Communicate clearly, concisely, and correctly in written, spoken, and visual form using language and terminology appropriate and relevant to health and other science-related fields.
- Optional VLO for Physics: Remove if Physics will not be part of your program.
  Analyze the fundamental laws of physics and discuss how they apply to human health and wellness.
- Investigate future careers in health sciences and other high affinity fields and identify appropriate postsecondary programs to prepare for chosen career
- Discuss strategies for ongoing personal and professional development.

Admission Requirements

Identify the Admission Requirements for the program.

Minimum admission requirements for this program include:

- OSSD or equivalent or mature student status.

Please refer to each college for specific admission information.

H. PROGRAM CURRICULUM (APPENDIX C)

****These course descriptions are the exemplar descriptions. Colleges must update with information specific to the program at their institution. Course Codes and Titles must align with ONCAT exemplar course descriptions (listed below).**

Semester	**Course Code/ Course Title** (*As indicated in Appendix A*)	**General Education Course** *(indicate with an X)*	**Total Course Hours**	**Course Description**
1 and/or 2	BIOLXXXX / Biology for Health Sciences - Advanced		Approx. 120 hours	This course will enable the student to develop a foundation in the fundamental concepts of Biological Sciences with application to a systematic study of the human body. The student will study and explore Cell Biology, Genetics, Evolution and Microbiology and Physiology with an emphasis on understanding the underlying concepts and principles and applying them to a diversity of body systems.
1 and/or 2	CHEMXXXX / Chemistry for Health Sciences - Advanced		Approx. 90 hours	Chemistry for Health Sciences (Advanced) will enable students to deepen their understanding of chemistry through the study of atomic and molecular structure, chemical systems and equilibrium, electrochemistry, energy changes and rates of reactions, and organic chemistry. These topics will have a strong health science emphasis and will provide students with a chemistry perspective of health and the human body.
1 and/or 2	MATHXXXX / Math for Health Sciences - Advanced		Approx. 90 hours	By the end of this course, students will have demonstrated the ability to evaluate a variety of arithmetic and algebraic expressions and apply these principles to typical situations that arise in the health care fields. Concepts studied include numeracy fundamentals; systems of measurement and dimensional analysis; algebra, with an emphasis on analytical techniques; and evaluating systems of linear equations. Students will develop essential critical thinking and problem-solving skills through exposure to application problems, including dosage

				calculations, solution dilutions, concentrations and pH. Students will use numerical methods to calculate measures of center and variation, along with graphs, charts, and tables to effectively describe, analyze and interpret data. Empirical and theoretical probability of simple events using key rules of probability will be calculated. Students will distinguish between discrete and continuous probability distributions and describe key features of the standard normal distribution. Students will calculate probabilities and values using the standard normal distribution, and calculate confidence intervals for means and proportions and apply descriptive and inferential statistics to the health care field
1 and/or 2	(Optional) PHYSXXXX / Physics for the Health Sciences		Approx. 60 hours	Students apply critical thinking and problem-solving techniques to physics concepts related to the health science field. Concepts studied include kinematics, forces, work, energy and power, thermodynamics, fluids and pressure, nuclear physics, electrostatics, magnetism, waves and electromagnetic radiation.
1 and/or 2	COMMXXXX / Communications		Determined by college.	Determined by college.
1 and/or 2	GNEDXXXX / General Education	X	Determined by college.	Determined by college.
1 and/or 2	Other Course Offerings		Determined by college.	Determined by college.

Add additional rows as required to complete the curriculum chart.

I. REGULATORY STATUS FORM (APPENDIX D)

Please complete the following:

There IS a legislative requirement that program graduates must be certified or licensed by a regulatory authority to practice or work in the occupation

☐ **Mandatory recognition of a regulatory authority exists and is being sought.**
(Please refer to Section A below- *Mandatory Regulatory Requirements*)

There IS or IS NOT a voluntary (i.e., not required by legislation) licensing or certification for entry to practice in the profession or trade.

☐ YES
☒ NO

☐ **Voluntary recognition of a regulatory authority IS being sought.**
(Please refer to Section B below- *Recognition by Voluntary Association*)

☒ **Voluntary recognition is NOT being sought***.
Please explain why: No regulatory organization.

*Note: *There may be titling implications for programs that are not seeking recognition in an area where existing programs have secured recognition.*

C. MANDATORY REGULATORY REQUIREMENTS

Where licensing or certification is ***required by legislation*** for entry to practice in the profession or trade, the Ministry of Training, Colleges and Universities requires that colleges ensure that their programs will meet the requirements of the regulatory body in order to be approved for funding.

Name of regulatory authority:

Status (please select ALL that apply)

☐ Accreditation or approval by the regulatory authority / designated third party received.
Date of recognition:

☐ The college is working toward accreditation with the regulatory authority/ designated third party.
Describe current status of application:
Expected date of recognition:

☐ The regulatory authority does not accredit educational programs directly or through designated third party. Formal acknowledgement (e.g. in its published or legislated registration requirements) that the program graduates will be eligible to write any required certifying or registration exam(s) or

that the program is otherwise recognized for the purposes of certifying or registering a graduate is being sought.

Please submit an acknowledgement and/or evidence from the regulatory authority regarding the status of the recognition.

D. RECOGNITION BY VOLUNTARY ASSOCIATION

Colleges may choose to have a program accredited or recognized by a voluntary membership organization or association. Graduate eligibility for association recognition or adherence to standards imposed by the body is ***a recommendation and not a requirement*** for program funding approval by the Ministry of Training, Colleges and Universities.

Name of voluntary association:

Status (please select ALL that apply)

☐ The college is working toward recognition.
Describe current status of application:
Expected date of recognition:

☐ Recognition has been received.
Date of recognition:
Type of recognition (e.g. accreditation, graduates eligible to write membership exams, etc.):

☐ The association does not recognize educational programs directly or through designated third party. Formal recognition (e.g. in its published requirements) that the program graduates will be eligible to write any required certifying or registration exam(s) or that the program is otherwise recognized for the purposes of certifying or registering a graduate is being sought.

Please submit an acknowledgement and/or evidence from the regulatory authority or voluntary association regarding the status of the recognition.

Appendix E: **Partial List of Destination Programs at Ontario Colleges for Graduates of the Pre-Heath Science Pathway to Certificates and Diplomas and Pre-Health Science Pathway to Diplomas and Degrees**

Program	Number of Colleges Offering Program	Number of Subjects Required or Recommended
Baccalaureate Degree Programs		
Athletic Therapy, (BAHS)	1	5
Biotechnology (BAT)	2	3-5
Exercise Science and Health Promotion (BAHS)	1	5
Medical Radiation Sciences	1	4
Nursing (Collaborative)	20	3-5
Paramedicine (BSc.)	1	4
Radiation Therapy	1	5
Therapeutic Recreation	1	2
Advanced Diploma Programs		
Accupunture	1	2
Biomedical Engineering Technology	2	3-5
Biotechnology Advanced	6	2-5
Biotechnology Technologist	2	4-5
Chemical Engineering Technology	7	3-4
Chemical Laoratory Technology	3	3-4
Chemical Production and Engineering Power	1	4
Civil Engineering Technology	9	2-3
Dental Hygiene	7	4-5
Dental Technology	1	5
Denturism	1	5
Diagnostic Medical Sonography	2	4-5
Environmental Technologist	5	2-5
Food Service Technology	1	2
Hearing Instrument Specialist	1	4
Massage Therapy	5	3-4
Medical Laboratory Science	3	4
Medical Laboratory Technology	1	4
Medical Radiation Technology	4	4-5
Pharmaceutical and Food Science Technology	1	4
Physical Fitness Management	1	5
Power Engineering Technology	1	4

Respiratory Therapy	7	3-5
Veterinary Technology	2	4
Diploma Programs		
Assistant de l'ergothérapeute et assistant du physiothérapeute	TBC	1-2
Assistant en pharmacie-vente au détail	TBC	4
Biotechnology Technician	TBC	4-5
Chemical Engineering Technician	TBC	4
Civil Engineering Technician	TBC	2-3
Environmental Technician	TBC	4
Veterinary Technology (Associate Diploma)	TBC	4
NOTE: This is a partial list only		