



# Course Outcomes Form

## Northwest Indian College

Follow the *Instructions for Completing the Course Outcomes Form*, which is available on the *NWIC Assessment Website* at <http://www.nwic.edu/assessment/course-outcomes>

Please submit this form electronically to the chair of the Curriculum Committee

It is important to keep the following principles in mind when completing this form:

- Regardless of the mode of learning (i.e., face-to-face, Independent learning, ITV, online, etc.) or the location of a course, only one course outcomes form is to be created for each course.
- Regardless of the mode of learning or the location of a course, the **NWIC outcomes** and the **Course outcomes** must be the same for each course.
- The **Instructional activities** and the **Assessment/evaluation strategies** may differ depending on the mode of learning. Please indicate the **Instructional activities** and the **Assessment/evaluation strategies** that are different from the face-to-face class (e.g., "IL: Essay").

Last date this form was updated or edited	11/1/16
Course Number (e.g., ENGL 101)	MATH 126
Course Name (e.g., English Composition I)	Introduction to Multivariable Calculus
List the names of all instructor(s) who participated in creating and approved these course outcomes (please consult with at least one other person)	Matteo Tamburini, Cassandra Cook, Sina Koohbour
List the main textbooks, readings or other resources used in this course (including title, year and publisher)	<i>Calculus: Multivariable</i> , by Guadalupe I. Lonzano, Deborah Hughes-Hallett, et. al, 2012. Wiley.

**A. NWIC outcomes:** From the *List of NWIC Outcomes*, select the most important outcomes you assess in this course (at least one NWIC outcome must be chosen- **maximum of four**).

<b>NWIC outcome</b>	<b>Instructional Activities: How will students master this outcome? (e.g., solving problems, group activity)</b>	<b>Assessment/Evaluation Strategies: How will you measure this outcome? (e.g., student presentations, essays)</b>
use analytical and critical thinking skills to draw and interpret conclusions from multiple perspectives including Indigenous theory and methods	Ongoing individual and group problem-solving.	Students' ability to solve a variety of problems on the final exam.
effectively communicate in diverse situations, from receiving to expressing information, both verbally and non-verbally	Ongoing practice, with recurring feedback from the instructor.	Students' portfolio of work.

**B. Course outcomes:** In order of priority, list the most important other learning outcomes for this course that you assess (a maximum of 10).

<b>Other course outcomes: Complete the sentence – As a result of this course, students will be able to...</b>	<b>Instructional Activities: How will students master this outcome? (e.g., solving problems, group activity)</b>	<b>Assessment / Evaluation Strategies: How will you measure this outcome? (e.g., student presentations, essays)</b>
<del>evaluate</del> -Evaluate functions of two or more variables described by a table, equation, or graph.;	Presentation by instructor, group discussion, individual problem solving.	Individual interactions with students, observation of class discussion, assignments and quizzes.
<del>use</del> -Use various coordinate systems (e.g. rectangular, polar, cylindrical) and convert among them.;	Presentation by instructor, group discussion, individual problem solving.	Individual interactions with students, observation of class discussion, assignments and quizzes.
<del>create</del> -Create and interpret pictorial representations of functions of two variables, such as graphs, contour diagrams and cross-sections by hand and using a graphing utility.;	Presentation by instructor, group discussion, individual problem solving.	Individual interactions with students, observation of class discussion, assignments and quizzes.
<del>find</del> -Find formulas for linear functions with given properties, create and interpret their graphical representations, and use linear approximation.;	Presentation by instructor, group discussion, individual problem solving.	Individual interactions with students, observation of class discussion, assignments and quizzes.
<del>A</del> Apply and interpret the operations of vector algebra, including addition, scalar multiplication, dot and cross product.;	Presentation by instructor, group discussion, individual problem solving.	Individual interactions with students, observation of class discussion, assignments and quizzes.

<p><del>use</del><b>Use</b> and interpret the geometric definitions of partial and directional derivatives, the gradient, tangent planes (and their equations) as they relate to graphs and surfaces; explain the connection between these derivatives and the graph, contour diagram and cross-sections of a function.</p>	<p>Presentation by instructor, group discussion, individual problem solving.</p>	<p>Individual interactions with students, observation of class discussion, assignments and quizzes.</p>
<p><b>I</b>nterpret the various derivatives of multivariable functions as rates of change.</p>	<p>Presentation by instructor, group discussion, individual problem solving.</p>	<p>Individual interactions with students, observation of class discussion, assignments and quizzes.</p>
<p><del>use</del><b>Use</b> and interpret the geometric definition of the integral as a limit of Riemann sums.</p>	<p>Presentation by instructor, group discussion, individual problem solving.</p>	<p>Individual interactions with students, observation of class discussion, assignments and quizzes.</p>
<p><b>A</b>pply the geometric understanding of multiple integrals to practical situations, such as computing average values, areas, volumes and total amount from a density.</p>	<p>Presentation by instructor, group discussion, individual problem solving.</p>	<p>Individual interactions with students, observation of class discussion, assignments and quizzes.</p>

**C. List the NWIC outcomes and course outcomes from above on your syllabus.**

**D. Assess the NWIC outcomes and course outcomes, which are listed above, in your classes.**