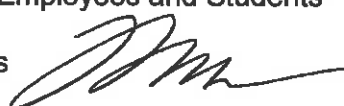


PRESIDENTIAL POLICY MEMORANDUM NO. 298

To: All Virginia Tech Employees and Students
From: Timothy D. Sands 
Date: April 18, 2016
Subject: Adoption of the Implementation for the Pathways General Education Curriculum

Approved by the Commission on Undergraduate Studies & Policies: February 22, 2016
Approved by University Council April 18, 2016
Approved by the President: April 18, 2016
Effective Date: Fall 2018

University Council approved a resolution to adopt the implementation for the Pathways General Education Curriculum to guide implementation of resolution CUSP 2014-15H (Presidential Policy Memorandum No. 290).

Following is the text of the resolution.

WHEREAS, the *Pathways General Education Curriculum* was adopted at University Council in April 2015; and

WHEREAS, the University Curriculum Committee for General Education, in consultation with faculty, staff, students, and administration, identified numerous changes to be made to University forms and practices to successfully implement the *Pathways General Education Curriculum* for students entering Fall 2018, and

WHEREAS, a number of changes to the course and minor proposal process is necessary in order to introduce and transition courses, minors, and alternative pathways to the *Pathways General Education Curriculum*; and

WHEREAS, a number of changes to the existing governance process is necessary in order to streamline the course approval process both during the transition and beyond; and

WHEREAS, guidelines are necessary for integration of ethical reasoning or intercultural and global awareness into each Pathways course and across each Pathways minor and alternative Pathway, and

WHEREAS, detailed guidelines of the general education program assessment process are necessary; and

Invent the Future

WHEREAS, the University has identified numerous needs for professional development support at each stage in the implementation process.

THEREFORE, LET IT BE RESOLVED that the University move forward in a timely and orderly manner to follow the proposed recommendations in the *Implementation of the Pathways General Education Curriculum* to guide the successful implementation of the *Pathways General Education* curriculum (approved by University Council April 2015) for students entering Fall 2018, and to take appropriate action to meet the following objectives:

1. To establish guidelines for proposal and process for approval of courses, groups of courses, minors, and alternative pathways (pp. 2-7).
2. To establish criteria by which to integrate either Ethical Reasoning or Intercultural and Global Awareness in every Pathways course, groups of courses, minor, and alternative Pathway (pp. 7).
3. To establish a faculty-driven program-level assessment structure that guides and supports continuous improvement of the *Pathways General Education Curriculum* (pp. 8-11).
4. To provide guidance to the many offices and units prepared to provide the professional development necessary to meet campus-wide needs for successful implementation (pp. 11-13).
5. To establish expectations of the campus community to participate in and provide support for the program, faculty, and students involved (pp. 13).

Implementation of the Pathways Curriculum Plan

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Implementation of the Pathways Curriculum Plan

Introduction

Pathways Mission: As a central component of the undergraduate experience at Virginia Tech, the Pathways curriculum will guide students to examine the world from multiple perspectives and integrate their knowledge across disciplines and domains of learning through a hands-on, minds-on approach.

Pathways Guiding Principles: Integration, Inclusivity, Relevance

Mission and Guiding Principles pulled from [Pathways Curriculum Plan](#), approved April 2015

Connection to the Pathways Curriculum Plan. This document is designed to support the [Pathways Curriculum Plan](#). For a copy of the approved plan, please find it online at pathways.prov.vt.edu. Because the Pathways Curriculum Plan was approved through all stages of governance, no changes have been made to the concepts as described in that plan.

Purpose. This implementation document addresses the operational issues that will enable a fully functioning and effective general education program, including the processing of proposals, integration, assessment, and the infrastructure to support the program, faculty/advisors, and students.

Development. This document is the result of collaboration across individual faculty members and groups of faculty, committees, departments, and colleges. After considering input provided during 15-day-review and clarifying it with stakeholders, the University Curriculum Committee for General Education (UCCGE) reworked earlier drafts of this implementation document.

Timeline. The work on this document began immediately upon the approval of the Pathways Curriculum Plan in Spring 2015. UCCGE will submit this document to the Commission on Undergraduate Studies and Policies (CUSP) in February 2016 with the goal of approval by CUSP and University Council during Spring 2016. UCCGE anticipates that the Pathways Curriculum Plan will go into effect for incoming freshmen in Fall 2018.

I. [Proposal Guidelines - Overview](#)

The three approaches to Pathways (distribution, Pathways Minor, Alternative Pathway) focus fundamentally on the Learning Outcomes and Indicators described in the Pathways Curriculum Plan. All proposals will be submitted electronically and will include the following basic information:

- Description of ways the course, group of courses, minor, or alternative pathway meets the principles of the Pathways curriculum – integration, inclusivity, and relevance
- Identity of, and strategies for addressing, the Core and Integrative Outcomes and Indicators – Note: The Core and Integrative Outcomes and Indicators can be found in Appendix A.

Latest Pathways proposal forms can be found with supplemental materials at pathways.prov.vt.edu. Sections II, III, and IV of this document describe the criteria unique to individual courses or course groups, Pathways Minors, and Alternative Pathways.

II. Proposal Guidelines and Approval Process for a Single Course or Group of Courses

Proposals for Pathways courses will be reviewed by UCCGE and the University Curriculum Committee (UCC). During the transition period, CUSP will convene an ad hoc committee to review all course proposals. A digital version of the course proposal can be reviewed [here](#) or at pathways.prov.vt.edu.

In a case where the learning indicators of an outcome will be met by students over a group of courses, the collection of those courses must be submitted as a unit for approval to meet that outcome (for example, three one-credit labs or studio experiences cumulatively satisfy the requirements typically met by a single 3-credit course).

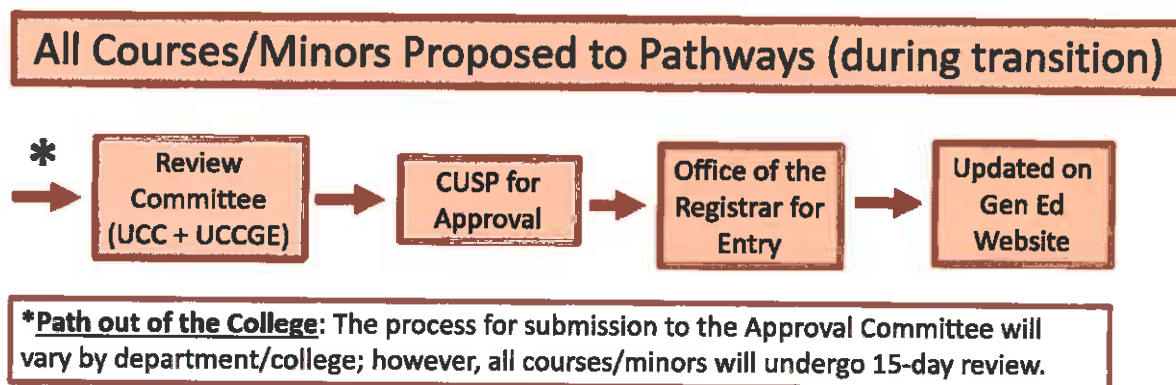
Proposals for Pathways courses will request the following information:

Pathways Mission, Principles, Outcomes, and Indicators

- a. How do the course or courses fit the Pathways Mission and Guiding Principles?
- b. How will the course(s) offer opportunities for students to meet at least one Core Learning Outcome?
- c. How will the course(s) offer opportunities for students to meet at least one of the Integrative Learning Outcomes: Ethical Reasoning or Intercultural and Global Awareness? Will the Integrative Outcome be met initially?

A. During Transition Period

During the transition period, courses and minors will follow a streamlined governance process. Once a course or minor has been approved at the department and college levels and has completed 15-day review, an ad hoc review committee, convened by CUSP, will evaluate the course and minor proposals for both university and Pathways requirements. The courses will then be submitted to CUSP for final approval. Following approval, the Registrar's Office will enter the course or minor into Banner and the Office of General Education will update the listing on the Pathways website.



The Ad Hoc Review Committee. The responsibility of the ad hoc review committee is to facilitate the approval of courses for inclusion in Pathways. This group will convene Fall 2016 and exist for a two-year period. The membership, appointed by CUSP based on nominations from relevant units, will include:

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- 1 Faculty member each from College of Agriculture and Life Sciences, College of Architecture and Urban Studies, College of Engineering, College of Liberal Arts and Human Sciences, College of Natural Resources and the Environment, College of Science, and the Pamplin College of Business.

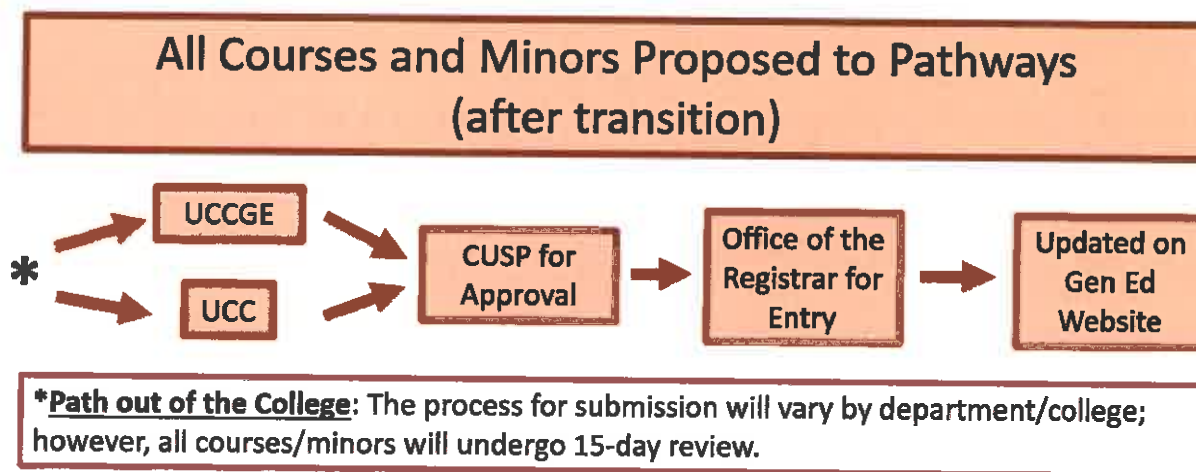
Note: It is recommended that these faculty members have curriculum committee experience and experience teaching General Education courses.

- 2 members from UCC
- 2 members from UCCGE
- 1 member each from University Studies and University Libraries
- Chairs from both UCC and UCCGE
- Non-voting support representatives from Registrar's office and Office of General Education

For any existing courses (whether approved for the CLE or not), the ad hoc committee will review only criteria related to general education.

B. After Transition (Fall 2018 and beyond)

After the transition period when the ad hoc review committee is disbanded, courses and minors will follow a streamlined version of the current approval process. Once a course or minor has been approved at the department and college levels and has completed 15-day review, UCCGE will review courses and minors appropriate for inclusion in Pathways. Simultaneously, proposals will be reviewed by UCC to be approved as a university course or minor. The proposal will then move to CUSP for final approval. Once the course or minor has been approved as both a university and general education course, the Registrar's Office will enter the course or minor into Banner and the Office of General Education will update the listing on the website.



III. Guidelines and Approval Process for a Pathways Minor

Pathways Minors are designed to provide a meaningful, integrated and experiential path through a substantial part of a student's general education program. Pathways Minors are meant to be accessible to any student from any major and realistic to complete within a four-year undergraduate program. Please see the draft Pathways Minor Proposal Form and Pathways Minor Checksheet in Supplemental Materials at pathways.prov.vt.edu.

Proposals for Pathways Minors will request the following information:

1. Pathways Mission, Principles, Outcomes, and Indicators

- a. How does the minor fit the Pathways mission and Guiding Principles?
- b. How will the minor offer opportunities for students to meet the Core Learning Outcome and Indicators?
- c. How will the minor offer opportunities for students to meet one of the Integrative Learning Outcomes: Ethical Reasoning or Intercultural and Global Awareness?

2. Pathways Minor Logistics

- a. **Checksheet** — As part of the Pathways Minors proposal, a checksheet will be organized around the learning outcomes and will list required and elective courses. (See Minor proposal form in supplemental materials). The checksheet should indicate clearly that a student will have courses that meet at least three Core Learning Outcomes and both Integrative Learning Outcomes, regardless of electives/options chosen. Any elective courses with major restrictions need to be clearly identified as such, and alternative courses must be available to students not in that major. The prerequisites to courses must be identified clearly. Pathways Minors proposals do not need to be resubmitted every year, but the checksheets do. Approval of checksheets will follow the same process used for a conventional minor, and UCCGE will be flagged to review these only if there is a change greater than 20% or a change in which Pathways outcomes are met.
- b. **General requirements** — Pathways Minors must meet all of the guidelines for regular minors, including a minimum of 18 hours and at least 6 credit hours at the 3000 - 4000 level. The proposal must contain all of the information requested of a regular minor.
- c. **Approval status** — Students who complete a Pathways Minor must be guaranteed a minimum of 9 credits of Pathways coursework, including three separate core outcomes and both integrative outcomes. Students who complete a Pathways Minor are responsible for completing all additional required Pathways credits and outcomes.
- d. **Prerequisites for entering the minor** — Generally, there should be no prerequisites or restrictions to enter a Pathways minor; however, foundational courses within the general education curriculum may be appropriate before an introductory course in a Pathways minor is taken. If prerequisites to courses are not included in the minor, other courses must be available that do not have prerequisites.
- e. **Capstone** – The minor must include a capstone/summative experience where students apply, integrate, and reflect upon their general education courses, especially those in the minor. The capstone should be at the 3000 or 4000 level. The capstone course will provide a summative point of assessing student learning of the outcomes, especially the Integrative Outcomes.

As noted, during the transition period, approval of courses and minors will follow a streamlined governance process. Once a course or minor proposal leaves the college, the ad hoc review committee will vet the course and minor proposals for both university and Pathways requirements before submitting the proposal to CUSP for final approval. The Registrar's Office will then enter the course or minor into Banner and the Office of General Education will update the listing on the Pathways website.

IV. Guidelines and Approval Process for an Alternative Pathway

Alternative Pathways allow for a high level of creativity, individuality and experiential learning of general education outcomes within an academic framework. Alternative Pathways may be initiated by an individual student and guided by a faculty mentor or may be developed by faculty members to support the learning of a cohort of students. Alternative Pathways can be built around existing faculty-mentored high-impact practices such as study abroad, internships, undergraduate research and service learning. Alternative Pathways are more experimental and individualized than Pathways Minors, requiring significant initiative on the part of the student and willing support of an appropriate faculty mentor or mentors. Please see the draft Alternative Pathways Proposal form in Supplemental Materials at pathways.prov.vt.edu.

Proposals for Alternative Pathways will include the following:

1. Pathways Mission, Principles, Outcomes, and Indicators

- a. How does the proposed Alternative Pathway fit the Pathways mission and Guiding Principles?
- b. Specify the Learning Outcomes and Indicators the Alternative Pathway will meet. By successfully completing the minor, a student should complete courses in at least three of the six Core Learning Outcomes and both Integrative Outcomes.

2. Alternative Pathway Logistics

- a. **Plan** – The plan should be organized by learning outcome. Every outcome must be tagged by a credit-bearing experience even though some of the learning will take place outside of the course. The credit-bearing experience may be a pre-, co- or post-requisite to the experience and could be a course not universally approved as a Pathways course (e.g. undergraduate research or independent study). The plan should list courses and experiences to be included in the Alternative Pathways. Completion of some of the outcomes may need to be manually entered into Banner. The Office of General Education will work with the Registrar to do this. The plan should identify means of assessment.
- b. **Restrictions** – Alternative Pathways may have restrictions, pre-requisites, and limited enrollments.
- c. **Verification** — List faculty member(s) responsible for verifying successful completion of Alternative Pathway requirements. The faculty member should provide a statement endorsing the plan and agreeing to mentor the student/students, including routine meetings and advising.

3. Additional Criteria for an Alternative Pathway

- a. Experiences incurred or courses taken prior to approval of an Alternative Pathway might not count. Students should obtain approval prior to beginning the experiences.
- b. Meeting one or more of the university's metrics – Undergraduate Research, Service Learning, Experiential Learning, or Study Abroad – is strongly encouraged.
- c. Students are encouraged to share final reports, projects or portfolios with the Office of General Education to showcase in poster sessions, fairs, and on the web.

Alternative Pathways will be reviewed by UCCGE. The Office of General Education will be available to work with students and faculty mentors in the development of Alternative Pathways proposals. Some of these experiences may be approved for a single instance (e.g. one student

participating internship with a political campaign) while others may be approved for a longer term (e.g. an established and repeating study abroad program). In the event of substantial change (e.g. change in participating faculty, change in outcomes addressed) to a repeating program/experience, these proposals will need to be resubmitted for review.

V. Integrative Outcomes

The integrative outcomes are an essential component of all three Pathways. Integration is a hallmark of Pathways so that general education is a meaningful and cohesive experience for students. Every course in the Pathways curriculum will integrate either Ethical Reasoning or Intercultural and Global Awareness into the core content, providing students opportunities to develop these ways of thinking across multiple perspectives. In a lesson or lessons carefully crafted to achieve integration, students would be offered the opportunity to meet both the core and the integrative outcomes simultaneously through a portion of their work.

Each academic program may have a different vision for integration of Ethical Reasoning or Intercultural and Global Awareness in a particular discipline. Some courses may naturally allow for a more theoretical grounding, while others may take a more applied approach, bringing in the theoretical content where needed in order for students to move forward.

Since a majority of indicators must be addressed, purposeful choosing of indicators allows for various approaches. Some courses might expose students to the ways in which the integrative outcome maps onto the given subject. The value of this integration to student learning and development may certainly be realized and incorporated more often and at deeper levels in future iterations of a course.

Faculty members are encouraged to create active-learning approaches to support students in meeting the integrative outcome and indicators in an authentic and relevant way, honoring disciplinary context. Students should engage with the integrative material in the context of the core content, not encounter disciplinary content for a certain percentage of time and then achieve the integrative outcome in a separate unit.

Support for designing and assessing integrative outcomes will be provided in many ways and during all stages of implementation, including the following:

- Workshops
- Pathways Summer Institute on Integration
- Examples of course proposals and integrative lesson plans/syllabi
- CIDER-supported database of resources from colleagues and professional societies
- Opportunities during workshops and institutes to collaborate with domain experts in the integrative fields

Because this integration may be more challenging in some courses than in others, the Pathways Plan specifies that a two-year delay may be requested. Departments or programs opting to delay adoption of the integrative outcomes can be granted a provisional approval with the expectation to resubmit a full proposal in two years. (See [Pathways Curriculum Plan](#) for more information.)

VI. Assessment

A. Tenets of general education assessment

Virginia Tech's assessment of the general education program will be course-embedded, faculty-led, and improvement-focused. Assessment will focus on the overall effectiveness of the Pathways General Education program as required for SACS-COC accreditation.

The tenets for assessment include the following:

- Assessment of student learning is based on student work that is required in the course and aligns with the indicators.
- The assessment process will honor the diversity of disciplinary methodologies.
- Data will be collected at the assignment level and will be aggregated to measure the effectiveness of the program, not the competency of the individual student or instructor.
- The assessment process will build on and feed existing best assessment practices on campus.
- The data gathered for assessment will be used to inform teaching and learning in general education.
- Faculty members will have appropriate and continuing support to engage in course design, course-embedded assessment, curriculum alignment, and program improvement.
- As program assessment supports ongoing improvement of the curriculum, the assessment process will also be dynamic and open to ongoing improvement as needed.

Assessment is the process of systematically collecting information about student learning for the purpose of making more transparent what students take away from their course experiences. For Pathways, particularly given its early implementation, assessment provides information for faculty to examine the curriculum and see where areas might be strengthened.

B. Pathways performance criteria

By the end of summer 2016, faculty groups will have developed specific criteria for each Pathways outcome to guide faculty members teaching Pathways courses in categorizing students into three competency levels: below competent, competent, or above competent. A team of faculty members will work with one of the eight Pathway outcomes (the six core outcomes plus the two integrative outcomes) and define and describe *below*, *at*, and *above competency* within each of the outcomes. These performance indicators will be designed to apply to all indicators and disciplines within a Pathways outcome.

These competency categorizations will be developed by groups of interdisciplinary faculty with interest, teaching experience, and expertise in the outcome of which the indicator is a part. These faculty members will be appointed and compensated by the Office of the Provost.

The performance criterion will resemble this example taken from the AAC&U VALUE Rubric for Inquiry:

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	Above Competent (2)	Competent (1)	Below Competent (0)
Indicator: Topic Selection	Identifies a creative, focused, and manageable topic that addresses potentially significant yet previously less-explored aspects of the topic.	Identifies a focused and manageable/doable topic that appropriately addresses relevant aspects of the topic.	Identifies a topic that is far too general and wide-ranging to be manageable and doable.

Diagram. Example of a portion of the Inquiry VALUE Rubric from AAC&U.

This work will be followed by faculty efforts in summer 2017 to review a sample of student products from pilot Pathways courses that used the performance criteria developed in the summer of 2016. This review in 2017 may lead to changes in the performance criteria. In addition, this review will inform future Pathways course and faculty development areas.

C. Faculty decision-making – course-embedded assessment

When faculty members and departments submit Pathways proposals, they identify the Pathway indicators that will be addressed in their courses. Each time a course is taught, the instructor will design and identify assignments that align with those identified indicators. These assignments are chosen at the discretion of the faculty member and will be affected by class size, disciplinary area, and preferences of the instructor. Assignments to ascertain student competence might include any of the following:

- written exam
- oral exam
- multiple-choice questions
- observation/performance
- essay
- capstone project
- other approaches a faculty member might propose and justify

For multiple-section courses, methods may be determined for all sections by the department.

For each Pathway indicator, the faculty member will categorize student performance as *below competent*, *competent*, or *above competent*. This categorization is based on faculty-developed performance criteria described in the prior section. Faculty members may directly use the guiding descriptions from these criteria for evaluation of writing, visual, or oral student work. Faculty members may have to use the criteria more indirectly if they use multiple-choice tests. For instance, faculty members may have to determine how many correct MC items would indicate competence.

Support from CIDER and the Office of Assessment and Evaluation (OAE) is available to assist in these determinations, either through one-to-one consultation or group workshops. These consultations and workshops, open to full and part-time faculty and graduate students, will be offered throughout the year, particularly at high-need times just before and at the start of each semester.

D. Faculty reporting

Each time a course is taught, faculty members will report on the Pathway indicators addressed in the course by supplying the number and percentage of students who are below competent, competent, above competent. Information for each indicator is only necessary for one assignment during the semester. One assignment may meet multiple (or all) indicators. Depending

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on the indicator, it may be that an assignment later in the course might provide a more meaningful measurement of student competence. Regardless, this reporting choice is up to the faculty member.

For classes/sections with more than 20 students, an instructor may choose, with the approval of their department head/chair, to report indicator ranking data for a random sample of 20 students chosen at the end of the semester from the class list using a computerized randomization mechanism.

All students would complete the same assignments, but the work of these 20 students would then be reviewed in-depth by the instructor specifically for evidence of competence for each of the relevant indicators. Then the instructors will report the rankings of competence this results in, summarized into percentages for each indicator, along with the total class size.

Note: Categorizing students into one of the three competency levels may be different from evaluating the student and giving a grade on an assignment. For example, a grade may be affected by tardiness or improper format and the assignment may include more than just the indicator.

In addition, faculty members will provide one example of student work that represents below-competent, competent, and above-competent work. These examples will be used for the outcome-level review and norming that will occur each summer.

For those faculty members working with students completing Pathways minors or alternative Pathways, competency of those students will be evaluated by faculty review of students' culminating capstone projects using capstone-specific performance criteria to be developed later.

E. Data management

After the instructor has categorized the students into one of the three competency levels for each of the Pathways indicators, the faculty member will then submit this information in a table to the Office of Assessment and Evaluation.

Note: these data will not be student, faculty, or course identifiable because they will be aggregated at the level of the indicator and outcome. Below is an example of the type of form course instructors will be asked to complete.

Indicator	Assessment Method	Assessment Criteria	Below Competent (0)		Competent		Above Competent		Total	
			Number of Students	Percent of Students	Number of Students	Percent of Students	Number of Students	Percent of Students	Number of Students	Percent of Students
Identify fundamental concepts of the social sciences.	Nine multiple choice items will be embedded on final exam in the course.	<i>Highly Competent:</i> Correctly responding to 8 or 9 items <i>Competent:</i> Correctly responding 6 or 7 items	81	32.8%	117	47.4%	49	19.8%	247	100.0%
<i>Repeat for each chosen indicator ...</i>										

Table. Sample reporting table for a course in Reasoning in the Social Sciences.

Course instructors will have access to the information that they submitted for assessment of Pathways learning in their courses. In addition, at the end of every semester, OAE will provide a summary of all student learning by indicator within each Pathways area. This summary – without specific student or course data – will be published and updated regularly on the OAE and Pathways websites.

Given that faculty will be the only ones with access to student data in their courses, they will be the ones who have the responsibility to use the data for course improvement related to Pathways indicators. The purpose of this data is to evaluate the Pathways curriculum and not individual faculty and their courses. The following diagram provides a visual representation of this data collection and aggregation aligned with the specific SACS standards met:

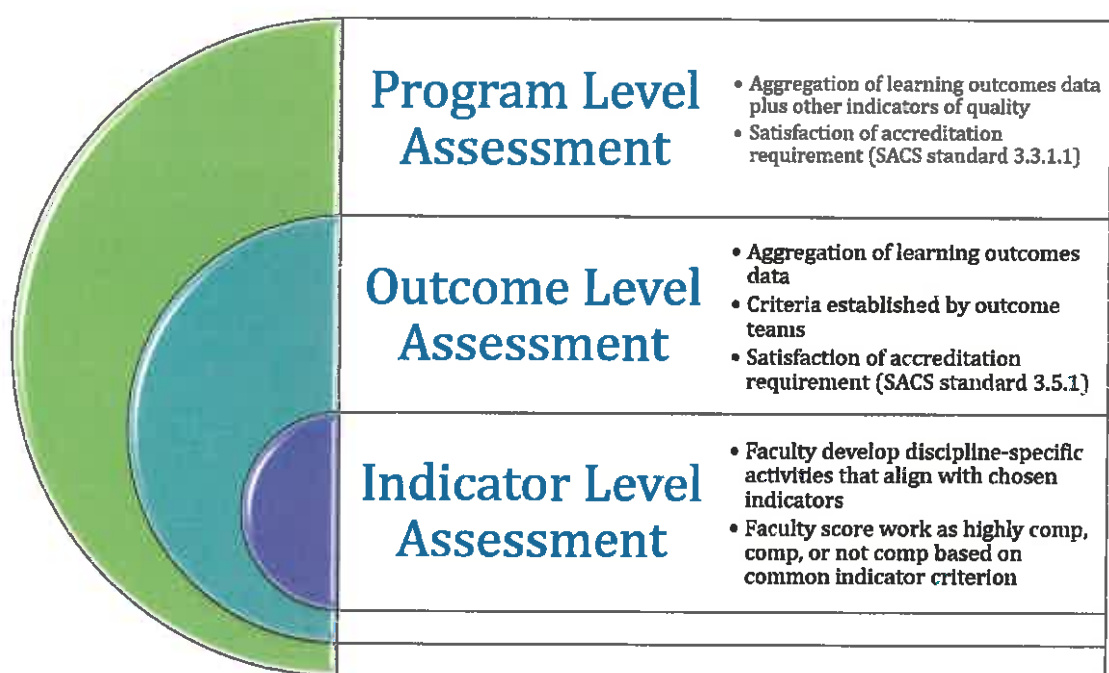


Diagram. Visual representation of data collection and aggregation in the Pathways program.

The Office of Assessment and Evaluation will facilitate faculty discussions regarding rating students in terms of these three levels of competency. Throughout this process, OAE and CIDER are available to discuss issues of assessment and pedagogy. Such topics, offered as workshops and also through one-on-one consultations, include aligning indicators and assignments; designing appropriate assignments for courses according to class size, disciplines, and other factors; distinguishing between assessment and grading; and using formative feedback to improve teaching and learning.

VII. Support for the General Education Community

A. Resource Support

Support for Course Development and Delivery – In addition to ongoing support of general education through base allocations to colleges and departments and annual enrollment support funding, the University has committed new financial resources to the Pathways General Education Initiative. An initial investment of \$500,000 will be allocated as development and delivery grants, with longer-term investments as needed to sustain enrollments and innovative learning experiences. (See “Pathways Course and Minor Development and Delivery Grants” at pathways.prov.vt.edu.)

Transitional Support – Support for work that falls outside of course development and delivery may be requested by departments and colleges to Rachel Holloway, Vice Provost for Undergraduate Academic Affairs. (See "Requests for Support for Transitioning from CLE to Pathways" at pathways.prov.vt.edu.)

B. Professional Development Support

As noted in the Pathways Plan, many programs and offices on campus stand ready to support faculty members and students as they move forward into the Pathways curriculum. These include the following:

- Center for Instructional Development and Research (CIDER)
- Office of Assessment and Evaluation (OAE)
- University Libraries
- Technology-enhanced Learning and Online Strategies (TLOS) and Networked Learning Initiatives (NLI), a unit within TLOS
- Diversity Development Institute
- Graduate School (in support of graduate students who teach in general education)
- University Academic Advising Center
- Office of General Education (OGE)
- University Curriculum Committee for General Education

Support for faculty members and other course instructors will be available at every stage in the process. The professional development needs for a successful implementation range from course proposal workshops to institutes for development of minors to training for review committees. The Office of General Education will continue to work with CIDER, TLOS, Office of Assessment and Evaluation, the Diversity Development Institute and other units to offer professional development during the academic year and summers. Proposal-writing workshops for departmental committees and individual faculty will guide course planners through the process. Institutes will support faculty working to develop Pathways minor programs including outcome alignment, interdisciplinary approaches, and embedded assessment. To support faculty and other teaching professionals in the area of integrated outcomes, partnerships with professional development offices and faculty from relevant departments (e.g. Philosophy, Foreign Language, Business, etc.) will provide training in the form of workshops and institutes.

All full-time faculty, part-time faculty, adjunct faculty, graduate students and other course instructors will be welcome to participate in these workshops. In addition, the Office of General Education will work with professional development offices and academic departments to offer and

schedule training opportunities in a structure appropriate for part-time and adjunct faculty teaching general education for the department. Graduate students will be offered professional development for teaching in Pathways as part of the GTA Training Workshop, Graduate Teaching Scholar, and Transformative Graduate Education programs.

In addition to training for proposing, teaching and assessing courses, training for departmental and college-level groups/committees responsible for proposal reviews will be coordinated by the Office of General Education.

Advising support for students will be available from well-informed advisors across the university. Because of the increased choices in Pathways, advising resources will include advisor training, up-to-date information on the Pathways website that includes Pathways Minors checksheets and flyers, Frequently Asked Questions, Pathways course lists by outcome, and other information for students as needed.

Support for Advisers will be available through regular training, updated databases, informational materials, and coordination with the University Academic Advising Center. Information will be provided not only to support student choices in Pathways, but also to support students who are completing requirements for the Curriculum for Liberal Education (CLE).

VIII. Post-Approval Expectations

A. Administrative Responsibilities

Promotion of the Approved Courses and Minors — Once a course or minor is approved, it will be listed in the Timetable as a Pathways course or Minor and on the website of the Office of General Education. Students will be well informed about the purpose of general education and the value of these courses and minors not only to their academic lives, but also to their subsequent participation in careers and ongoing community engagement. When minor checksheets are submitted to the Registrar's Office for annual review, the Office of General Education will review all Pathways Minor checksheets to ensure they still meet minimal Pathways Minor requirements.

Continued Support for Faculty - The Office of General Education, CIDER, TLOS, and the Office of Assessment and Evaluation will continue to support course instructors once courses and minors are underway. If course or minor designs need adjustments or assessments are due, these programs will offer workshops and one-on-one support.

Continued Support for Students - The Office of General Education will provide online and in-person resources for students who have questions or need assistance. *These resources will support the work of faculty and other course instructors and staff advisors, not replace it.*

Continued Support for Transfer Students - Transfer students enter Virginia Tech with diverse educational experiences impacting both general education and major/minor program requirements. Transfer student transcripts shall be reviewed by the Registrar's Office using existing processes. Equivalency credit is granted based on disciplinary outcome areas: first, for discipline-specific requirements, and second, for general education requirements (**core outcomes only**). AP, dual-enrollment, and transfer credit will follow current review and agreement practices based on

review of core outcomes only. Although transfer students will not be required to meet the integrative outcomes for entry or credit transfer, these students are encouraged to take Pathways courses that align with their remaining programs of study.

B. Faculty Responsibilities

Faculty and departments participating in Pathways agree to the following:

1. List the relevant Pathways outcome and indicators on syllabi.
2. Support the principles of Pathways: integration, inclusivity, relevance.
3. Offer evidence of student learning in the course as outlined in the Assessment section.
4. Alert the Office of General Education if a course or minor is no longer available for Pathways.
5. Provide informed advising for students.

Conclusion – Assuring a Vibrant General Education

Participation in Pathways presents an exciting opportunity for those who teach undergraduates to engage in a university-wide initiative, designed to "... guide students to examine the world from multiple perspectives and integrate their knowledge across disciplines and domains of learning through a hands-on, minds-on approach" ([Pathways Curriculum Plan](#)).

The Pathways Curriculum Plan offers a vibrant and relevant general education curriculum for students, while at the same time being dynamic and adaptive. By encouraging innovative pedagogies and identifying and sharing best practices, the implementation of Pathways can and should lead to continuing opportunities for rich and diverse courses, content and experiences that reflect the needs of our students and the expertise of our faculty.

Appendix: Pathways Learning Outcomes and Indicators of Learning

Core Outcomes and Indicators of Learning

Discourse is the exchange of ideas in writing or speaking, adapted to specific contexts and developed through discovery, analysis, creation, presentation, and evaluation. A student who is competent in discourse demonstrates the ability to reason, write, and speak effectively for academic, professional, and public purposes. In meeting the Discourse LO, students will demonstrate increasing proficiency over the years. All learning indicators would be met in all courses, but expectations for proficiency would be heightened for advanced/applied courses.

Credit hours: 9 credits--6 foundational + 3 advanced/applied writing and/or speaking courses

1. Discover and comprehend information from a variety of written, oral, and visual sources.
2. Analyze and evaluate the content and intent of information from diverse sources.
3. Develop effective content that is appropriate to a specific context, audience, and/or purpose.
4. Exchange ideas effectively with an audience.
5. Assess the product/presentation, including feedback from readers or listeners.

Quantitative and Computational Thinking is creative engagement with the world by the manipulation of precisely defined symbolic representations. Quantitative thinking is the formulation of questions that can be addressed using mathematical principles, leading to answers that include reliable and usable measures of accuracy. Computational thinking is the ability to conceive meaningful, information-based representations of the world that can be effectively manipulated using a computer. Courses or course sequences addressing this outcome must meet a majority of the learning indicators. Only the combination and integration of quantitative and computational courses will serve to meet this learning outcome.

Credit hours: 9 credits--6 foundational + 3 advanced/applied

1. Explain the application of computational or quantitative thinking across multiple knowledge domains.
2. Apply the foundational principles of computational or quantitative thinking to frame a question and devise a solution in a particular field of study.
3. Identify the impacts of computing and information technology on humanity.
4. Construct a model based on computational methods to analyze complex or large-scale phenomenon.
5. Draw valid quantitative inferences about situations characterized by inherent uncertainty.
6. Evaluate conclusions drawn from or decisions based on quantitative data.

Reasoning in the Natural Sciences involves the acquisition of the detailed knowledge of one or more of the natural sciences, hands-on experience with how science is conducted, what science can and cannot tell us about the universe, and the relationship between science and society. Courses or course sequences addressing this outcome must meet a majority of the learning indicators.

Credit hours: 6 credits (with an additional 2 lab credits for students in some majors)

1. Explain the foundational knowledge of a particular scientific discipline.
2. Apply principles and techniques of scientific inquiry.
3. Evaluate the credibility and the use/misuse of scientific information.
4. Analyze the reciprocal impact of science and society.

Critique and Practice in Design and the Arts involves a hands-on, minds-on approach by which students acquire the intellectual tools for a richer understanding and knowledge of the process, meaning and value of the fine, applied and performing arts and creative design. This outcome recognizes that the creative design process can and should be applied to a broad range of disciplines. Courses or course sequences addressing this outcome must meet a majority of the learning indicators. To meet this learning outcome, students will study the arts and design thinking in two courses: either 1 design and 1 arts course, or 2 integrated courses.

Credit hours: 6 credits--3 design + 3 arts, or 6 integrated design and arts

1. Identify and apply formal elements of design or the arts.
2. Explain the historical context of design or the arts.
3. Apply interpretive strategies or methodologies in design or the arts.
4. Employ skills, tools, and methods of working in design or the arts.
5. Produce a fully developed work through iterative processes of design or the arts.

Reasoning in the Social Sciences is the utilization of quantitative and qualitative methods to explain the behavior and actions of individuals, groups, and institutions within larger social, economic, political, and geographic contexts. Courses meeting this outcome will help students to understand that they are a small part of a larger global community and to engage with diverse individuals, groups, and ideas that have shaped or continue to shape the worlds they inhabit. Courses or course sequences addressing this outcome must meet a majority of the learning indicators.

Credit hours: 6 credits

1. Identify fundamental concepts of the social sciences.
2. Analyze human behavior, social institutions and/or patterns of culture using theories and methods of the social sciences.
3. Identify interconnections among and differences between social institutions, groups, and individuals.
4. Analyze the ways in which values and beliefs relate to human behavior and social relationships.

Critical Thinking in the Humanities is the utilization of quantitative and qualitative methods to explain the behavior and actions of individuals, groups, and institutions within larger social, economic, political, and geographic contexts. Courses meeting this outcome will help students to understand that they are a small part of a larger global community and to engage with diverse individuals, groups, and ideas that have shaped or continue to shape the worlds they inhabit. Courses or course sequences addressing this outcome must meet a majority of the learning indicators.

Credit hours: 6 credits

1. Identify fundamental concepts of the humanities.
2. Analyze texts and other created artifacts using theories and methods of the humanities.
3. Interpret texts and other created artifacts within multiple historical, intellectual, and cultural contexts.
4. Synthesize multiple complex sources and create a coherent narrative or argument.

Integrative Outcomes and Indicators of Learning

In addition to meeting at least one core outcome, every course will be approved as meeting outcomes in Ethical Reasoning and Intercultural and Global Awareness.

Ethical Reasoning is the principled evaluation of moral and political beliefs and practices. In today's complex and diverse world, ethical behavior requires more than just the desire to do the right thing. Foundational learning of ethical theories, issues, and applications provides tools that enable students to deliberate and to assess for themselves claims about ethical issues in their personal, public, and professional lives. Courses addressing this outcome must meet a majority of the learning indicators.

Credit hours: This learning outcome will be met in conjunction with Core Outcomes. No extra hours will be necessary.

1. Explain and contrast relevant ethical theories.
2. Identify ethical issues in a complex context.
3. Articulate and defend positions on ethical issues in a way that is both reasoned and informed by the complexities of those situations.

Intercultural and Global Awareness supports effective and appropriate interaction with a variety of people and different cultural contexts. Considerations of diversity and inclusion are crucial for students in an increasingly complex world. An important application of this learning is the critical analysis of global systems and legacies and their implications for people's lives and the earth's sustainability. Courses addressing this outcome must meet a majority of the learning indicators.

Credit hours: This learning outcome will be met in conjunction with Core Outcomes. No extra hours will be necessary.

1. Identify advantages and challenges of diversity and inclusion in communities and organizations.
2. Interpret an intercultural experience from both one's own and another's worldview.
3. Address significant global challenges and opportunities in the natural and human world.