

**Pathways to General Education
2019-2020 Assessment Data Summary**

Virginia Tech adopted the Pathways to General Education curriculum in Spring 2015 with an implementation date of Fall 2018. During the Fall 2019 semester, Virginia Tech offered 280 approved Pathways courses with a total of 1,311 sections that addressed one or more of the Core Concepts as well as one or more of the Integrative Concepts.¹ Pathways assessment data collection was suspended for Spring 2020 due to the COVID-19 pandemic. Consequently, only data from the Fall 2019 semester are included in the 2019-2020 summary report.

Table 1

Percentage and Number of Offered Courses and Sections Addressing Core and Integrative Concepts

	DISC	CTH	RSS	RNS	QCT	CPDA	CAIEUS	ER	IGA
Courses* (n=280)	11% (30)	33% (92)	29% (80)	13% (37)	12% (34)	15% (42)	11% (32)	41% (114)	62% (174)
Sections (n=1,311)	25% (323)	15% (201)	13% (172)	27% (348)	15% (194)	12% (155)	5% (70)	30% (390)	71% (932)

* Some Pathways courses address more than one Core Concept and/or Integrative Concept.

Instructors from these sections were asked to submit assessment data to the Institutional Effectiveness unit in the Office of Analytics and Institutional Effectiveness. Overall, Pathways assessment data were submitted for 205 courses (73%) and 1,041 sections (79%).

Table 2

Percentage/Number of Sections Offered, Data Received and Included in the Analyses, and Student Enrollment

	Fall 2019	Spring 2020	Overall
Pathways Sections Offered	1,311	N/A	1,311
Pathways Sections Reporting Data	79% (1,041)	N/A	79% (1,041)
Pathways Sections Included in Analyses	76% (1,002)	N/A	76% (1,002)
Enrollment in Pathways Sections Offered*	64,657	N/A	64,657
Enrollment in Sections Included in Analyses*	79% (51,040)	N/A	79% (51,040)

* Values include students who may be enrolled and/or assessed in multiple Pathways courses.

¹ The Core Concepts included in this report are Discourse (DISC); Critical Thinking in the Humanities (CTH); Reasoning in the Social Sciences (RSS); Reasoning in the Natural Sciences (RNS); Quantitative and Computational Thinking (QCT); Critique and Practice in Design and the Arts (CPDA); and Critical Analysis of Identity and Equity in the United States (CAIEUS). The two Integrative Concepts are Ethical Reasoning (ER) and Intercultural and Global Awareness (IGA).

Table 3

Percentage and Number of Pathways Sections Submitting Data for at Least One SLO by Concept and Semester

	Fall 2019		Spring 2020		Overall	
	Sections Offered	Sections Submitting Data*	Sections Offered	Sections Submitting Data	Sections Offered	Sections Submitting Data
DISC	323	86% (278)	N/A	N/A	323	86% (278)
CTH	201	57% (114)	N/A	N/A	201	57% (114)
RSS	172	62% (107)	N/A	N/A	172	62% (107)
RNS	348	97% (337)	N/A	N/A	348	97% (337)
QCT	194	80% (155)	N/A	N/A	194	80% (155)
CPDA	155	66% (102)	N/A	N/A	155	66% (102)
CAIEUS	70	37% (26)	N/A	N/A	70	37% (26)
ER	390	63% (246)	N/A	N/A	390	63% (246)
IGA	932	84% (787)	N/A	N/A	932	84% (787)

* Some Pathways sections submitted data for multiple Core Concepts and Integrative Concepts.

Of the data received for the Core Concepts and the Integrative Concepts during the Fall 2019 semester:

- 962 (92%) of the 1,041 sections submitted data for all required student learning outcomes (SLOs).
- 79 (8%) of the 1,041 sections were missing data for one or more required SLOs.

Pathways instructors provided data on how SLOs were measured in addition to student competency levels. Only data that met all of the following criteria were included in analyses.

- Instructors measured the same SLOs that were approved in the official Pathways course proposal.
- Instructors assessed individual student performance on each Pathways SLO independently from other Pathways SLOs addressed in the course.
- Instructors used all three rating categories (i.e., Below Competent, Competent, and Above Competent) when determining student competency on Pathways SLOs.
- The number of students reported by instructors as Below Competent, Competent, and Above Competent matched the total number of students assessed.

For sections reporting data for multiple SLOs, if data for one or more SLOs met the above criteria, but data for other SLOs did not, only data for those SLOs that met the criteria were included in analyses. These sections are labeled as “partially included.” Sections where none of the SLO data met the above criteria were excluded from the analyses. Of the 1,041 sections that submitted data for the Fall 2019 semester:

- 870 sections (84%) were fully included.
- 132 sections (13%) were partially included.
- 39 sections (4%) were excluded.

Table 4

Percentage and Number of Pathways Sections Submitting Complete Data for Required SLOs and Sections Included (Fully and Partially) in Analyses

	Sections Submitting Data	Sections Submitting Data for All Required SLOs	Sections Included (Fully and Partially) in Analyses
Discourse	278	274 (99%)	263 (95%)
Critical Thinking in the Humanities	114	101 (89%)	99 (87%)
Reasoning in the Social Sciences	107	101 (94%)	98 (92%)
Reasoning in the Natural Sciences	337	333 (99%)	335 (99%)
Quantitative and Computational Thinking	155	148 (95%)	152 (98%)
Critique and Practice in Design and the Arts	102	85 (83%)	88 (86%)
Critical Analysis of Identity and Equity in the United States	26	18 (69%)	23 (88%)
Ethical Reasoning	246	238 (97%)	220 (89%)
Intercultural and Global Awareness	787	763 (97%)	756 (96%)

Summary data related to student competency levels for each of the Core Concepts and the Integrative Concepts are provided in the following pages.

Core Concept: Discourse

Discourse courses are approved as either Foundational or Advanced/Applied. 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. Students will demonstrate increasing proficiency over the years. All student learning outcomes will be met in all courses, but expectations for proficiency will be heightened for Advanced/Applied courses. There are five student learning outcomes (SLOs) associated with Discourse.¹

SLO 1: Discover and comprehend information from a variety of written, oral, and visual sources.

SLO 2: Analyze and evaluate the content and intent of information from diverse sources.

SLO 3: Develop effective content that is appropriate to a specific context, audience, and/or purpose.

SLO 4: Exchange ideas effectively with an audience.

SLO 5: Assess the product/presentation, including feedback from readers or listeners.

During the Fall 2019 semester, in the Core Concept of Discourse, Virginia Tech offered 30 Pathways courses with a total of 323 sections. All Discourse courses address all five SLOs.

Assessment data were received from 20 courses (67%) and 278 sections (86%). Of the data received:

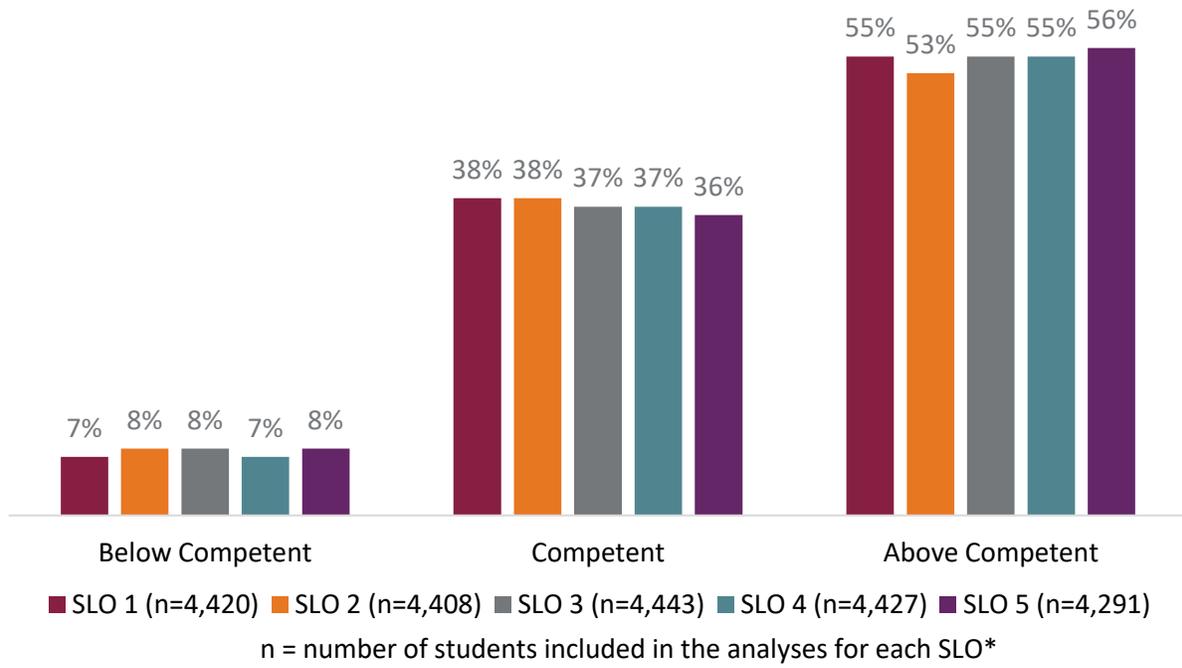
- 274 sections (99%) submitted data for all required SLOs.
- 4 sections (1%) were missing data for one or more required SLOs.
- 257 sections (92%) were fully included; 6 sections (2%) were partially included; and 15 sections (5%) were excluded.²

Overall, usable data were obtained from 263 (95%) of the 278 sections submitting data.

¹ This description of Discourse is adapted from the Pathways Implementation Plan approved in 2017.

² Data were partially included or excluded due to one or more of the reasons provided on page 3.

Discourse: Competency by SLO



* Values include students who may have been assessed in multiple Pathways courses.

Core Concept: Critical Thinking in the Humanities

Critical Thinking in the Humanities (CTH) involves interpretation and analysis of texts and other created artifacts to understand ideas, values, and identities in various spatial, cultural, and temporal contexts. Courses or course sequences addressing this concept must meet a majority of the student learning outcomes (SLOs). This Core Concept includes four SLOs.¹

SLO 1: Identify fundamental concepts of the humanities.

SLO 2: Analyze texts and other created artifacts using theories and methods of the humanities.

SLO 3: Interpret texts and other created artifacts within multiple historical, intellectual, and cultural contexts.

SLO 4: Synthesize multiple complex sources and create a coherent narrative or argument.

During the Fall 2019 semester, in the Core Concept of CTH, Virginia Tech offered 92 Pathways courses with a total of 201 sections. The following table indicates the percentage and number of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4
Courses (n=92)	86% (79)	88% (81)	68% (63)	65% (60)
Sections (n=201)	91% (182)	93% (186)	56% (113)	69% (139)

Assessment data were received from 58 courses (63%) and 114 sections (57%). Of the data received:

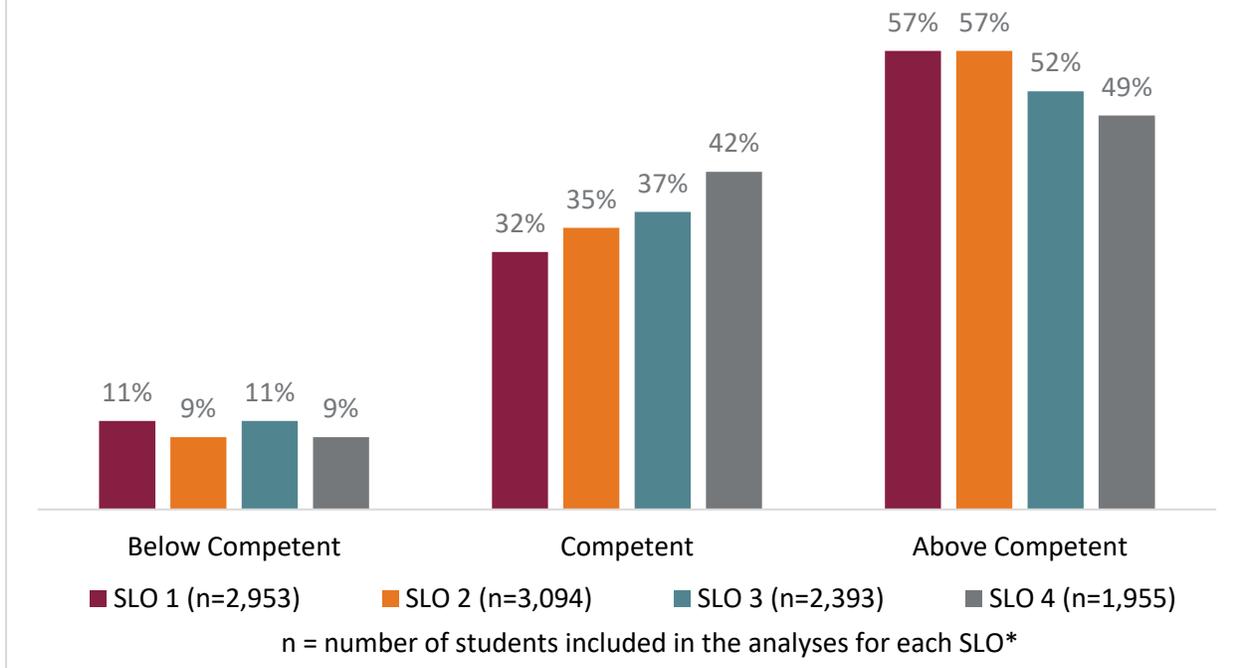
- 101 sections (89%) submitted data for all required SLOs.
- 13 sections (11%) were missing data for one or more required SLOs.
- 87 sections (76%) were fully included; 12 sections (11%) were partially included; and 15 sections (13%) were excluded.²

Overall, usable data were obtained from 99 (87%) of the 114 sections submitting data.

¹ This description of CTH is adapted from the Pathways Implementation Plan approved in 2017.

² Data were partially included or excluded due to one or more of the reasons provided on page 3.

Critical Thinking in the Humanities: Competency by SLO



* Values include students who may have been assessed in multiple Pathways courses.

Core Concept: Reasoning in the Social Sciences

Reasoning in the Social Sciences (RSS) requires 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 concept 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 concept must meet a majority of the student learning outcomes (SLOs). This Core Concept includes four SLOs.¹

SLO 1: Identify fundamental concepts of the social sciences.

SLO 2: Analyze human behavior, social institutions, and/or patterns of culture using theories and methods of the social sciences.

SLO 3: Identify interconnections among and differences between social institutions, groups, and individuals.

SLO 4: Analyze the ways in which values and beliefs relate to human behavior and social relationships.

During the Fall 2019 semester, in the Core Concept of RSS, Virginia Tech offered 80 Pathways courses with a total of 172 sections. The following table indicates the percentage and number of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4
Courses (n=80)	93% (74)	86% (69)	73% (58)	58% (46)
Sections (n=172)	92% (159)	87% (150)	78% (134)	49% (85)

Assessment data were received from 58 courses (73%) and 107 sections (62%). Of the data received:

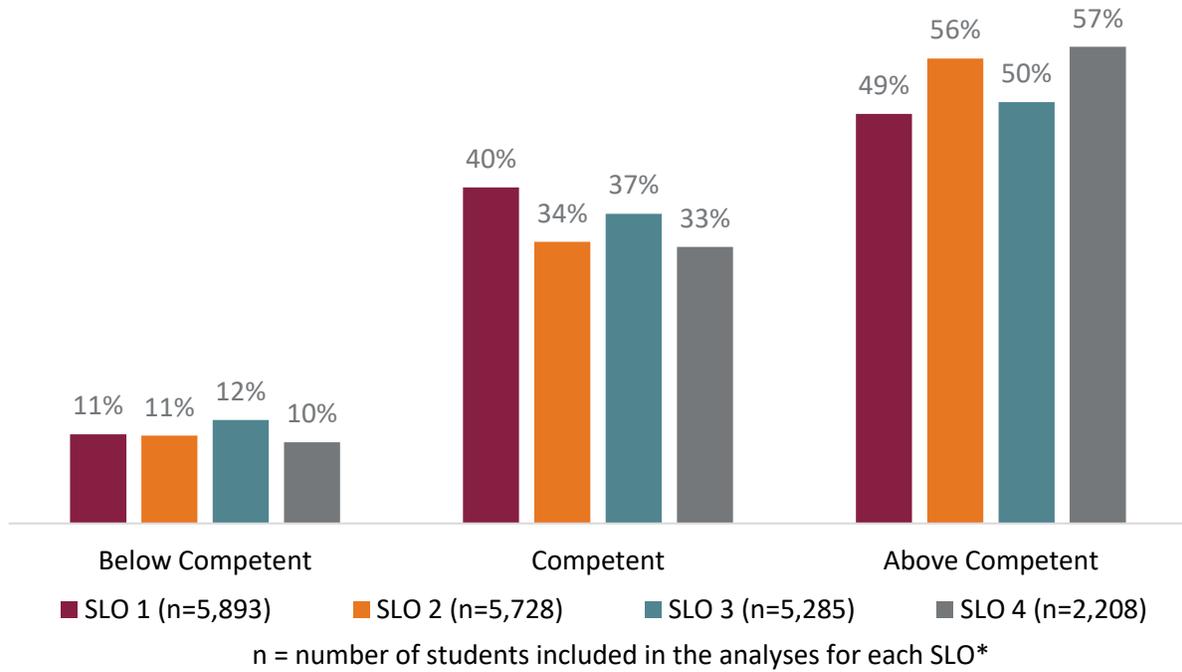
- 101 sections (94%) submitted data for all required SLOs.
- 6 sections (6%) were missing data for one or more required SLOs.
- 91 sections (85%) were fully included; 7 sections (7%) were partially included; and 9 sections (8%) were excluded.²

Overall, usable data were obtained from 98 (92%) of the 107 sections submitting data.

¹ This description of RSS is adapted from the Pathways Implementation Plan approved in 2017.

² Data were partially included or excluded due to one or more of the reasons provided on page 3.

Reasoning in the Social Sciences: Competency by SLO



* Values include students who may have been assessed in multiple Pathways courses.

Core Concept: Reasoning in the Natural Sciences

Reasoning in the Natural Sciences (RNS) 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 concept must meet a majority of the student learning outcomes (SLOs). This Core Concept includes four SLOs.¹

SLO 1: Explain the foundational knowledge of a particular scientific discipline.

SLO 2: Apply principles and techniques of scientific inquiry.

SLO 3: Evaluate the credibility and the use/misuse of scientific information.

SLO 4: Analyze the reciprocal impact of science and society.

During the Fall 2019 semester, in the Core Concept of RNS, Virginia Tech offered 37 Pathways courses with a total of 348 sections. The following table indicates the percentage and number of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4
Courses (<i>n</i> =37)	95% (35)	81% (30)	62% (23)	65% (24)
Sections (<i>n</i> =348)	99% (346)	96% (335)	51% (176)	54% (188)

Assessment data were received from 30 courses (81%) and 337 sections (97%). Of the data received:

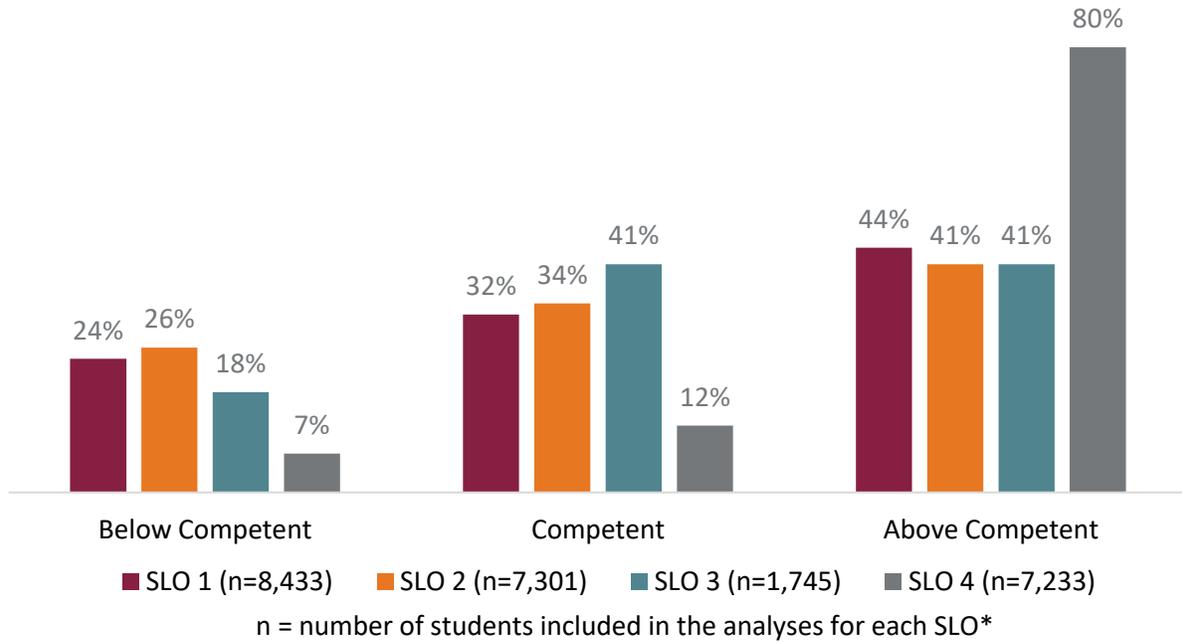
- 333 sections (99%) submitted data for all required SLOs.
- 4 sections (1%) were missing data for one or more required SLOs.
- 260 sections (77%) were fully included; 75 sections (22%) were partially included; and 2 sections (<1%) were excluded.²

Overall, usable data were obtained from 335 (99%) of the 337 sections submitting data.

¹ This description of RNS is adapted from the Pathways Implementation Plan approved in 2017.

² Data were partially included or excluded due to one or more of the reasons provided on page 3.

Reasoning in the Natural Sciences: Competency by SLO



* Values include students who may have been assessed in multiple Pathways courses.

Core Concept: Quantitative and Computational Thinking

Quantitative and Computational Thinking (QCT) courses are designated as either Foundational or Advanced/Applied. 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 concept must meet a majority of the student learning outcomes (SLOs). Six SLOs are associated with QCT.¹

SLO 1: Explain the application of computational or quantitative thinking across multiple knowledge domains.

SLO 2: Apply the foundational principles of computational or quantitative thinking to frame a question and devise a solution in a particular field of study.

SLO 3: Identify the impacts of computing and information technology on humanity.

SLO 4: Construct a model based on computational methods to analyze complex or large-scale phenomenon.

SLO 5: Draw valid quantitative inferences about situations characterized by inherent uncertainty.

SLO 6: Evaluate conclusions drawn from or decisions based on quantitative data.

During the Fall 2019 semester, in the Core Concept of QCT, Virginia Tech offered 34 Pathways courses with a total of 194 sections. The following table indicates the percentage and number of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4	SLO 5	SLO 6
Courses (n=34)	71% (24)	88% (30)	26% (9)	47% (16)	76% (26)	91% (31)
Sections (n=194)	85% (165)	97% (189)	6% (11)	20% (39)	94% (182)	98% (190)

Assessment data were received from 28 courses (82%) and 155 sections (80%). Of the data received:

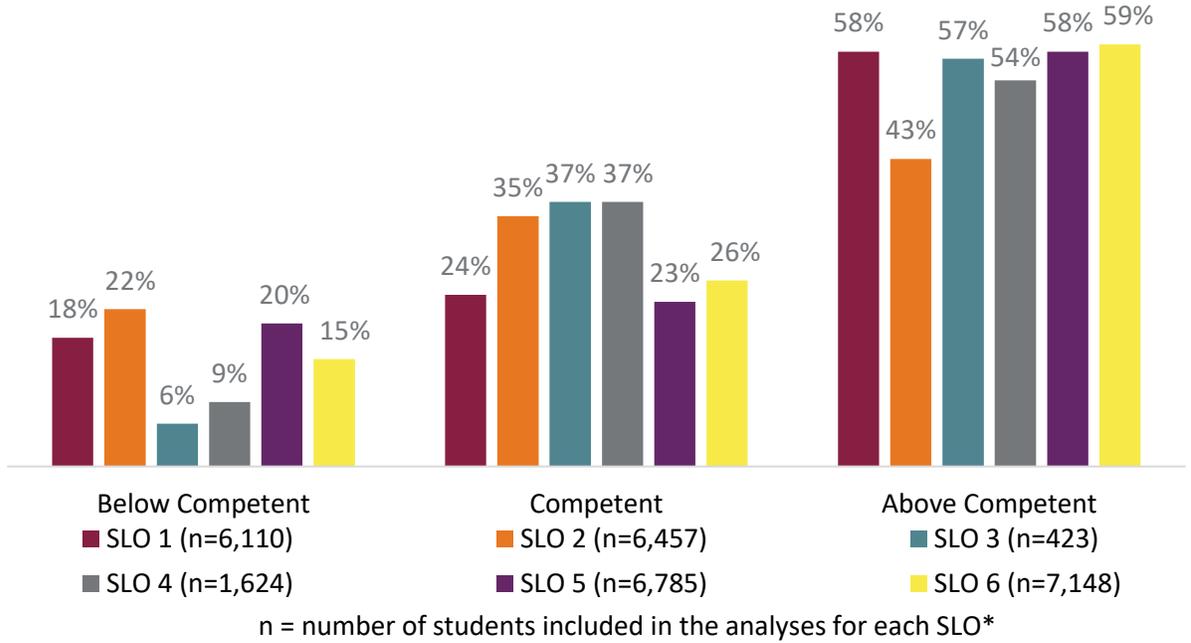
- 148 sections (95%) submitted data for all required SLOs.
- 7 sections (5%) were missing data for one or more required SLOs.
- 151 sections (97%) were fully included; 1 section (<1%) was partially included; and 3 sections (2%) were excluded.²

Overall, usable data were obtained from 152 (98%) of the 155 sections submitting data.

¹ This description of QCT is adapted from the Pathways Implementation Plan approved in 2017.

² Data were partially included or excluded due to one or more of the reasons provided on page 3.

Quantitative and Computational Thinking: Competency by SLO



* Values include students who may have been assessed in multiple Pathways courses.

Core Concept: Critique and Practice in Design and the Arts

Critique and Practice in Design and the Arts (CPDA) 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 concept recognizes that the creative design process can and should be applied to a broad range of disciplines. Courses or course sequences addressing this concept must meet a majority of the student learning outcomes (SLOs). This Core Concept includes five SLOs.¹

SLO 1: Identify and apply formal elements of design or the arts.

SLO 2: Explain the historical context of design or the arts.

SLO 3: Apply interpretive strategies or methodologies in design or the arts.

SLO 4: Employ skills, tools, and methods of working in design or the arts.

SLO 5: Produce a fully developed work through iterative processes of design or the arts.

During the Fall 2019 semester, in the Core Concept of CPDA, Virginia Tech offered 42 Pathways courses with a total of 155 sections. The following table indicates the percentage and number of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4	SLO 5
Courses (n=42)	81% (34)	38% (16)	67% (28)	76% (32)	55% (23)
Sections (n=155)	79% (122)	22% (34)	56% (87)	83% (129)	61% (94)

Assessment data were received from 29 courses (69%) and 102 sections (66%). Of the data received:

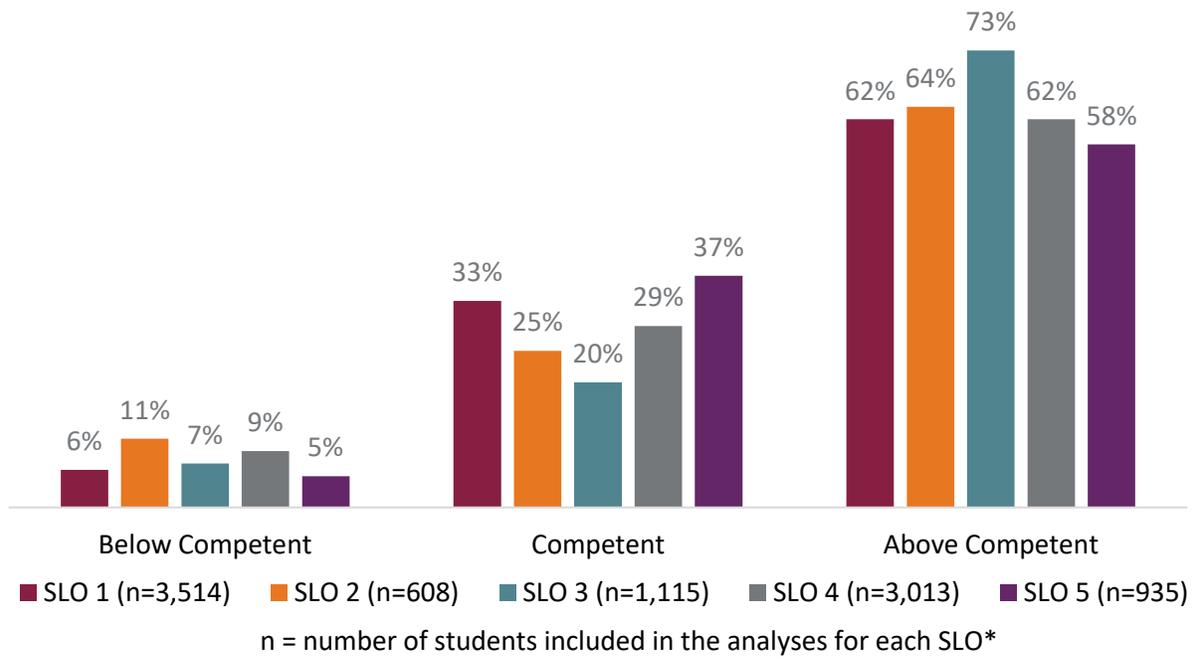
- 85 sections (83%) submitted data for all required SLOs.
- 17 sections (17%) were missing data for one or more required SLOs.
- 83 sections (81%) were fully included; 5 sections (5%) were partially included; and 14 sections (14%) were excluded.²

Overall, usable data were obtained from 88 (86%) of the 102 sections submitting data.

¹ This description of CPDA is adapted from the Pathways Implementation Plan approved in 2017.

² Data were partially included or excluded due to one or more of the reasons provided on page 3.

Critique and Practice in Design and the Arts: Competency by SLO



* Values include students who may have been assessed in multiple Pathways courses.

Core Concept: Critical Analysis of Identity and Equity in the United States

Critical Analysis of Identity and Equity in the United States (CAIEUS) explores the ways social identities related to race, ethnicity, gender, gender identity, gender expression, class, disability status, sexual orientation, religion, veteran status, economic status, age, and other socially salient categories and statuses influence the human condition and experience, with focus on the United States in particular or in comparative perspective. It recognizes that people in society have had different experiences and opportunities related to social categories, and challenges students to consider their ethical responsibilities to others in that context and in the context of Ut Prosim, to enhance their capacities to be engaged citizens and visionary leaders in an increasingly diverse society. Students will gain self-awareness of how they are situated relative to those around them based on social identities and foundational knowledge of the interactive dynamics of social identities, power, and inequity. This Core Concept includes five SLOs.¹

SLO 1: Analyze how social identities, statuses, space, place, traditions, and histories of inequity and power shape human experience in the United States (particularly or in comparative perspective).

SLO 2: Analyze social equity and diversity in the United States (particularly or in comparative perspective) through multiple perspectives on power and identity.

SLO 3: Demonstrate how creative works analyze and/or reimagine diversity in human experiences in the United States (particularly or in comparative perspective).

SLO 4: Demonstrate how aesthetic and cultural expressions mediate identities, statuses, space, place, formal traditions, and/or historical contexts in the United States (particularly or in comparative perspective).

SLO 5: Analyze the interactive relationships between place, space, identity formation, and sense of community in the United States (particularly or in comparative perspective).

During the Fall 2019 semester, in the Core Concept of CAIEUS, Virginia Tech offered 32 Pathways courses with a total of 70 sections. The following table indicates the percentage and number of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4	SLO 5
Courses (n=32)	97% (31)	84% (27)	34% (11)	25% (8)	63% (20)
Sections (n=70)	99% (69)	79% (55)	26% (18)	23% (16)	77% (54)

Assessment data were received from 21 courses (66%) and 26 sections (37%). Of the data received:

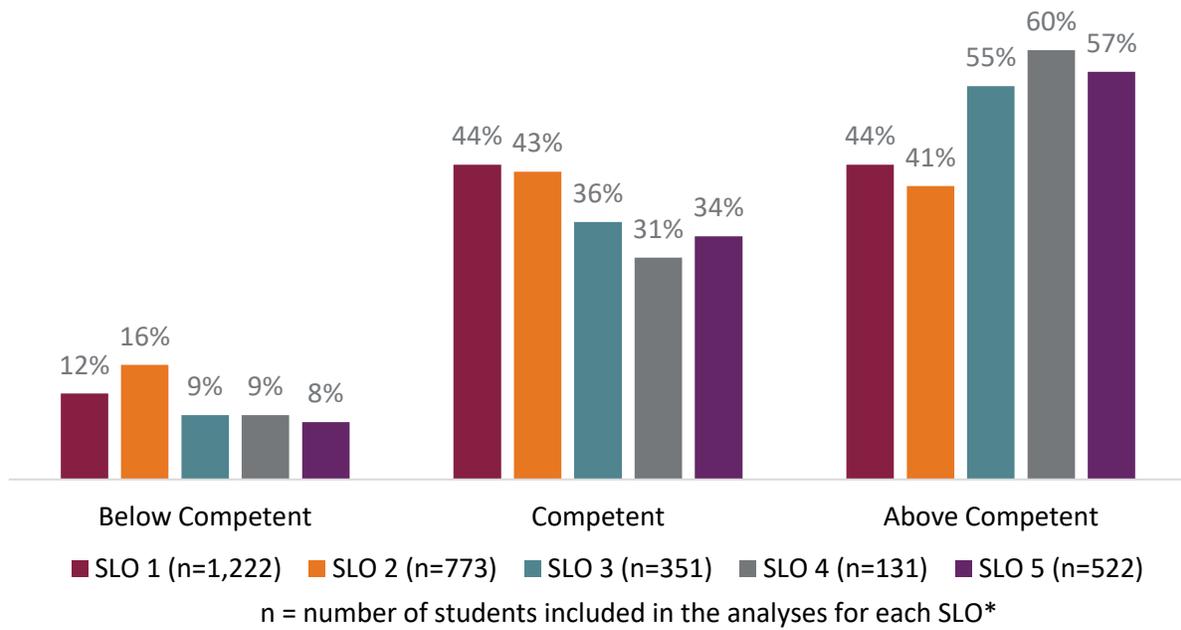
- 18 sections (69%) submitted data for all required SLOs.
- 8 sections (31%) were missing data for one or more required SLOs.
- 21 sections (81%) were fully included; 2 sections (8%) were partially included; and 3 sections (12%) were excluded.²

Overall, usable data were obtained from 23 (88%) of the 26 sections submitting data.

¹ This description of CAIEUS is adapted from the Pathways Implementation Plan approved in 2017.

² Data were partially included or excluded due to one or more of the reasons provided on page 3.

Critical Analysis of Identity and Equity in the United States:
Competency by SLO



* Values include students who may have been assessed in multiple Pathways courses.

Integrative Concept: Ethical Reasoning

Ethical Reasoning (ER) 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 assess for themselves claims about ethical issues in their personal, public, and professional lives. This Integrative Concept includes three SLOs.¹

SLO 1: Explain and contrast relevant ethical theories.

SLO 2: Identify ethical issues in a complex context.

SLO 3: Articulate and defend positions on ethical issues in a way that is both reasoned and informed by the complexities of those situations.

During the Fall 2019 semester, in the Integrative Concept of ER, Virginia Tech offered 114 Pathways courses with a total of 390 sections. The following table indicates the percentage and number of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3
Courses (n=114)	34% (39)	90% (103)	79% (90)
Sections (n=390)	25% (99)	90% (351)	78% (304)

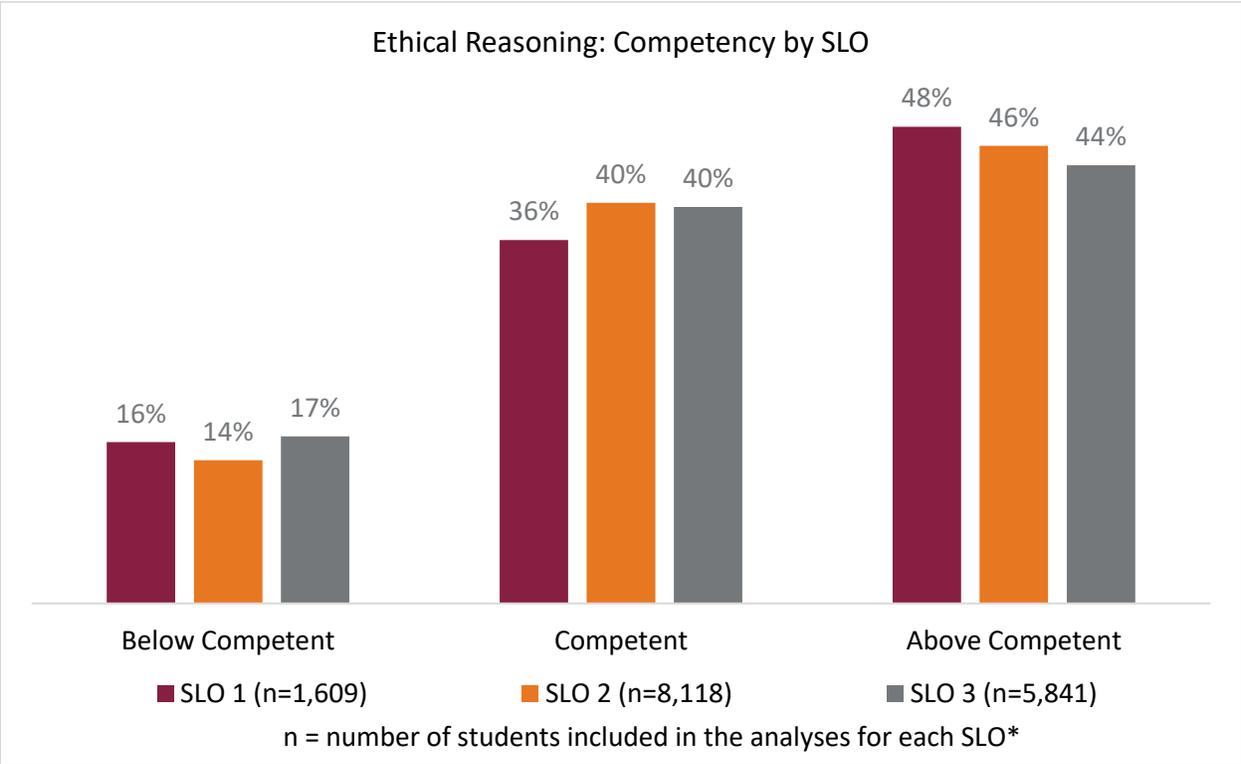
Assessment data were received from 81 courses (71%) and 246 sections (63%). Of the data received:

- 238 sections (97%) submitted data for all required SLOs.
- 8 sections (3%) were missing data for one or more required SLOs.
- 216 sections (88%) were fully included; 4 sections (2%) were partially included; and 26 sections (11%) were excluded.²

Overall, usable data were obtained from 220 (89%) of the 246 sections submitting data.

¹ This description of ER is adapted from the Pathways Implementation Plan approved in 2017.

² Data were partially included or excluded due to one or more of the reasons provided on page 3.



* Values include students who may have been assessed in multiple Pathways courses.

Integrative Concept: Intercultural and Global Awareness

Intercultural and Global Awareness (IGA) 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. This Integrative Concept includes three SLOs.¹

SLO 1: Identify advantages and challenges of diversity and inclusion in communities and organizations.

SLO 2: Interpret an intercultural experience from both one's own and another's worldview.

SLO 3: Address significant global challenges and opportunities in the natural and human world.

During the Fall 2019 semester, in the Integrative Concept of IGA, Virginia Tech offered 174 Pathways courses with a total of 932 sections. The following table indicates the percentage and number of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3
Courses (n=174)	68% (119)	76% (132)	64% (111)
Sections (n=932)	73% (679)	65% (603)	65% (607)

Assessment data were received from 123 courses (71%) and 787 sections (84%). Of the data received:

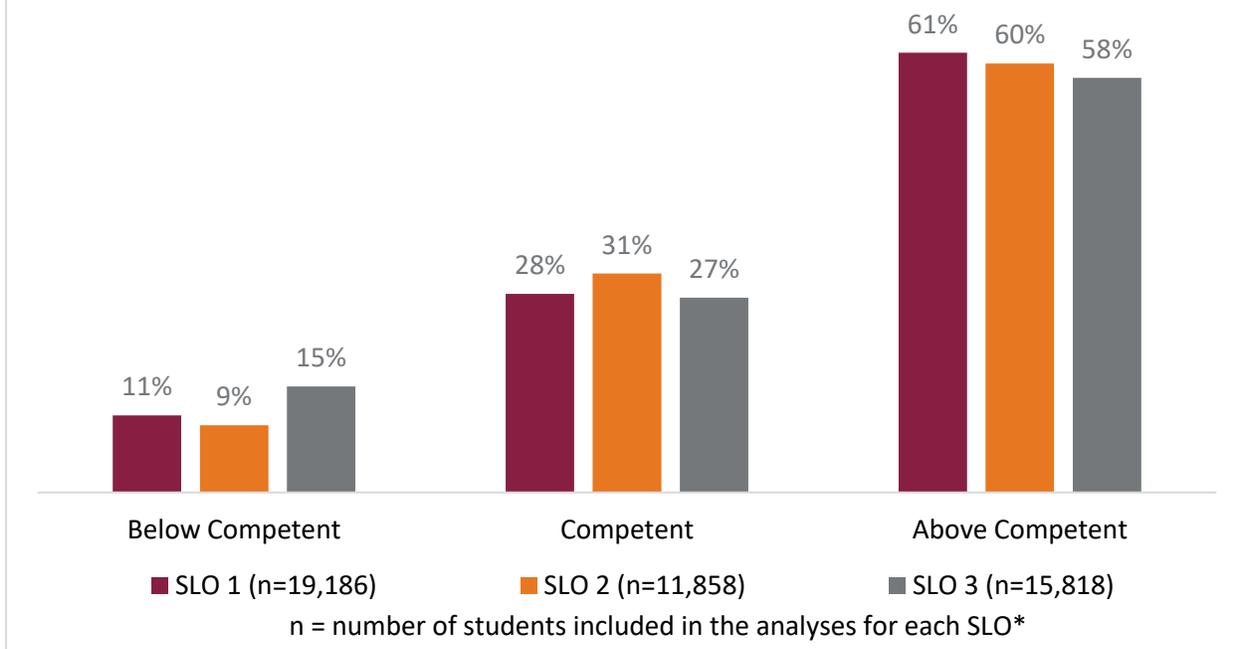
- 763 sections (97%) submitted data for all required SLOs.
- 24 sections (3%) were missing data for one or more required SLOs.
- 751 sections (95%) were fully included; 5 sections (<1%) were partially included; and 31 sections (4%) were excluded.²

Overall, usable data were obtained from 756 (96%) of the 787 sections submitting data.

¹ This description of IGA is adapted from the Pathways Implementation Plan approved in 2017.

² Data were partially included or excluded due to one or more of the reasons provided on page 3.

Intercultural and Global Awareness: Competency by SLO



* Values include students who may have been assessed in multiple Pathways courses.