

**Pathways to General Education
2020-2021 Assessment Data Summary**

Virginia Tech adopted the Pathways to General Education curriculum in Spring 2015 with an implementation date of Fall 2018. Pathways assessment data collection was suspended for Fall 2020 due to the COVID-19 pandemic. Consequently, only data from the Spring 2021 semester are included in the 2020-2021 summary report. During the Spring 2021 semester, Virginia Tech offered 374 approved Pathways courses with a total of 1,448 sections that addressed one or more Core Concepts as well as one or more Integrative Concepts.¹

Table 1

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

	DISC	CTH	RSS	RNS	QCT	CPDA	CAIEUS	ER	IGA
Courses* (n=374)	58 (16%)	115 (31%)	120 (32%)	38 (10%)	50 (13%)	54 (14%)	53 (14%)	164 (44%)	223 (60%)
Sections (n=1,448)	338 (23%)	217 (15%)	236 (16%)	363 (25%)	202 (14%)	233 (16%)	94 (6%)	498 (34%)	968 (67%)

* 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 226 courses (60%) and 1,010 sections (70%).

Table 2

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

	Fall 2020	Spring 2021	Overall
Pathways Sections Offered	N/A	1,448	1,448
Pathways Sections Reporting Data	N/A	1,010 (70%)	1,010 (70%)
Pathways Sections Included in Analyses	N/A	938 (65%)	938 (65%)
Enrollment in Pathways Sections Offered*	N/A	61,358	61,358
Enrollment in Sections Included in Analyses*	N/A	35,984 (59%)	35,984 (59%)

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

¹ The seven Pathways Core Concepts 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

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

	Fall 2020		Spring 2021		Overall	
	Sections Offered	Sections Submitting Data	Sections Offered*	Sections Submitting Data*	Sections Offered*	Sections Submitting Data*
DISC	N/A	N/A	338	249 (74%)	338	249 (74%)
CTH	N/A	N/A	217	100 (46%)	217	100 (46%)
RSS	N/A	N/A	236	133 (56%)	236	133 (56%)
RNS	N/A	N/A	363	355 (98%)	363	355 (98%)
QCT	N/A	N/A	202	153 (76%)	202	153 (76%)
CPDA	N/A	N/A	233	129 (55%)	233	129 (55%)
CAIEUS	N/A	N/A	94	40 (43%)	94	40 (43%)
ER	N/A	N/A	498	293 (59%)	498	293 (59%)
IGA	N/A	N/A	968	686 (71%)	968	686 (71%)
TOTAL	N/A	N/A	1,448	1,010 (70%)	1,448	1,010 (70%)

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

Of the data received for the Core Concepts and the Integrative Concepts during the Spring 2021 semester:

- 823 (81%) of the 1,010 sections submitted data for all required student learning outcomes (SLOs).
- 187 (19%) 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 preceding 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 1,010 sections that submitted data for the Spring 2021 semester:

- 876 sections (87%) were fully included.
- 62 sections (6%) were partially included.
- 72 sections (7%) were excluded.

Table 4

Number and Percentage 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 Analysis
Discourse	249	236 (95%)	246 (99%)
Critical Thinking in the Humanities	100	75 (75%)	78 (78%)
Reasoning in the Social Sciences	133	113 (85%)	86 (65%)
Reasoning in the Natural Sciences	355	287 (81%)	351 (99%)
Quantitative and Computational Thinking	153	66 (43%)	126 (82%)
Critique and Practice in Design and the Arts	129	115 (89%)	122 (95%)
Critical Analysis of Identity and Equity in the United States	40	31 (78%)	33 (83%)
Ethical Reasoning	293	274 (94%)	264 (90%)
Intercultural and Global Awareness	686	567 (83%)	634 (92%)

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 Spring 2021 semester, in the Core Concept of Discourse, Virginia Tech offered 58 Pathways courses with a total of 338 sections. All Discourse courses address all five SLOs.

Assessment data were received from 26 courses (45%) and 249 sections (74%). Of the data received:

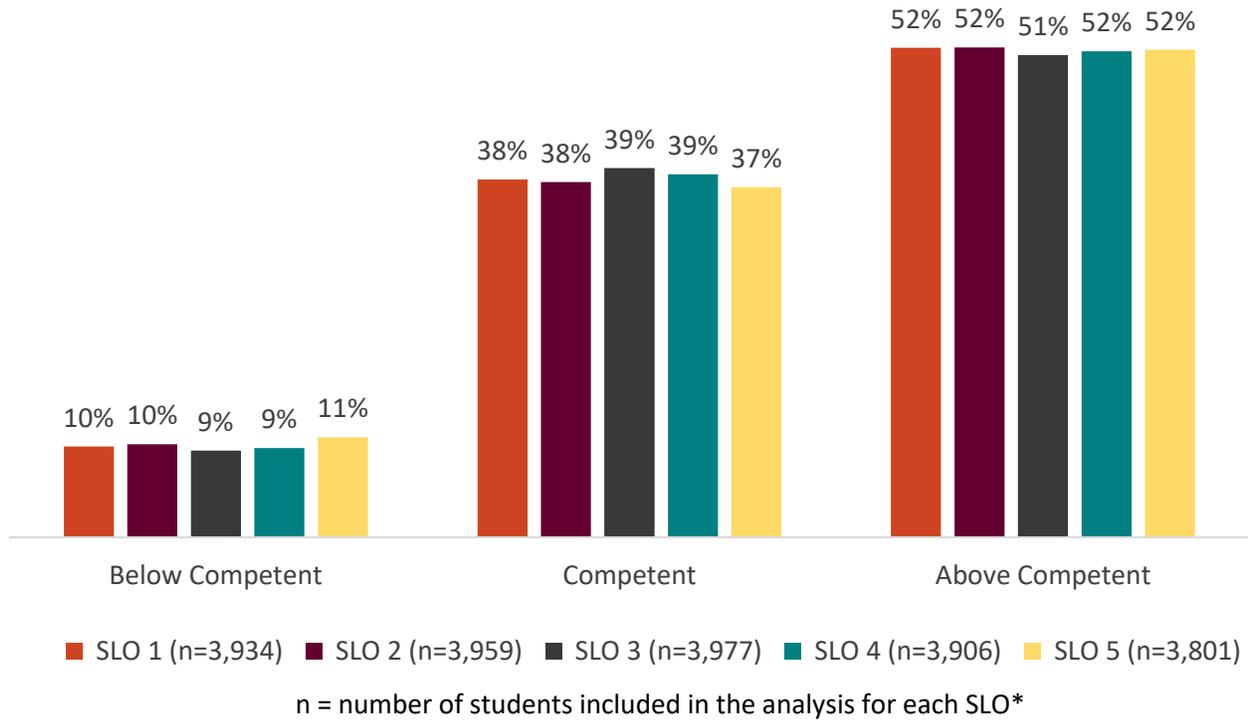
- 236 sections (95%) submitted data for all required SLOs.
- 13 sections (5%) were missing data for one or more required SLOs.
- 241 sections (97%) were fully included; 5 sections (2%) were partially included; and 3 sections (1%) were fully excluded.²

Overall, usable data were obtained from 246 (99%) of the 249 sections submitting data.

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

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

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 Spring 2021 semester, in the Core Concept of CTH, Virginia Tech offered 115 Pathways courses with a total of 217 sections. The following table indicates the number and percentage of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4
Courses (<i>n</i> =115)	94 (82%)	100 (87%)	79 (69%)	78 (68%)
Sections (<i>n</i> =217)	191 (88%)	194 (89%)	134 (62%)	147 (68%)

Assessment data were received from 44 courses (38%) and 100 sections (46%). Of the data received:

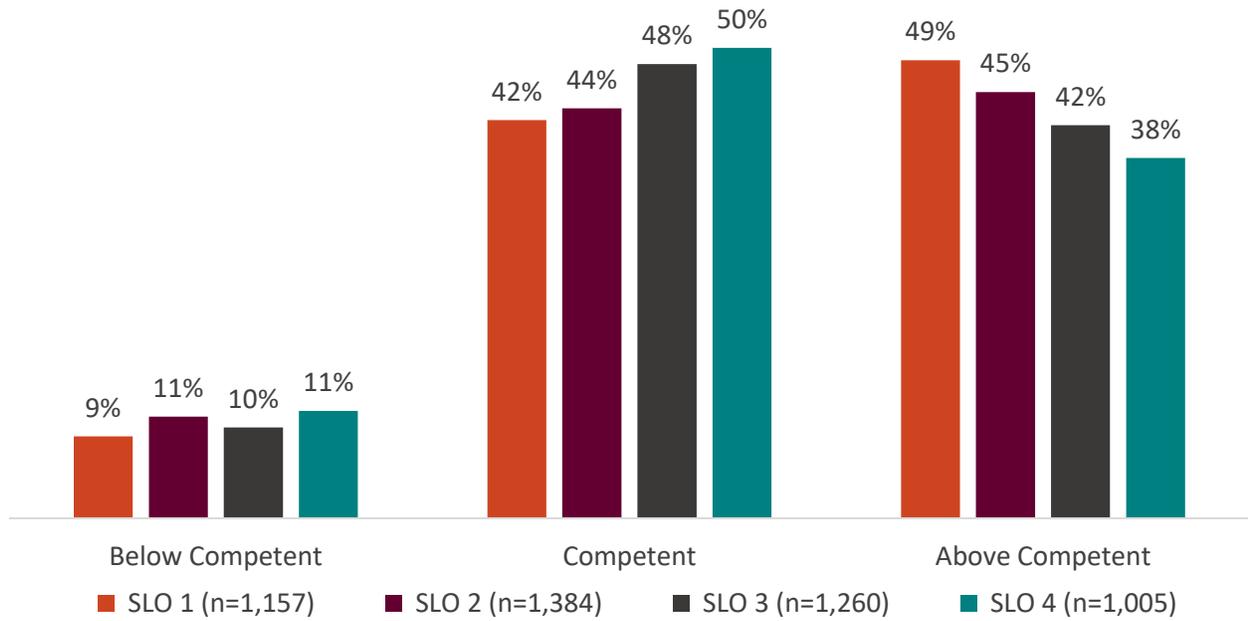
- 75 sections (75%) submitted data for all required SLOs.
- 25 sections (25%) were missing data for one or more required SLOs.
- 71 sections (71%) were fully included; 7 sections (7%) were partially included; and 22 sections (22%) were fully excluded.²

Overall, usable data were obtained from 78 (78%) of the 100 sections submitting data.

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

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

Critical Thinking in the Humanities: Competency by SLO



n = number of students included in the analysis for each 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 Spring 2021 semester, in the Core Concept of RSS, Virginia Tech offered 120 Pathways courses with a total of 236 sections. The following table indicates the number and percentage of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4
Courses (<i>n</i> =120)	100 (83%)	99 (83%)	87 (73%)	68 (57%)
Sections (<i>n</i> =236)	195 (83%)	205 (87%)	182 (77%)	128 (54%)

Assessment data were received from 59 courses (49%) and 133 sections (56%). Of the data received:

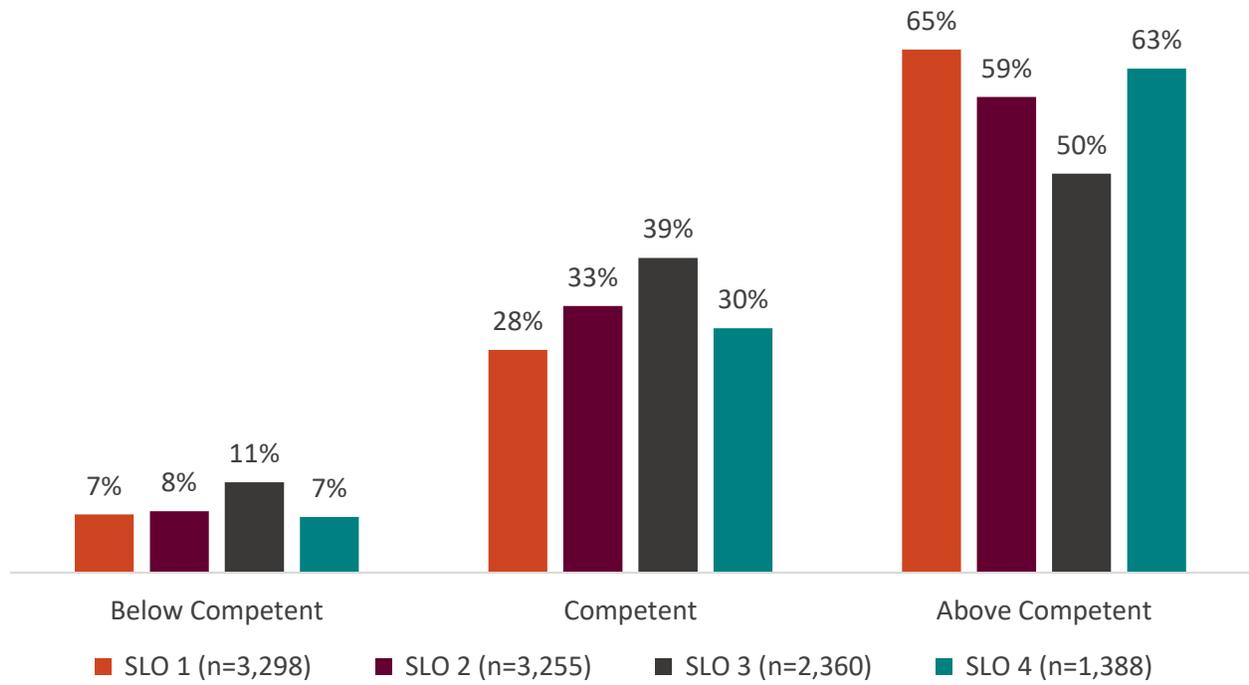
- 113 sections (85%) submitted data for all required SLOs.
- 20 sections (15%) were missing data for one or more required SLOs.
- 71 sections (53%) were fully included; 15 sections (11%) were partially included; and 47 sections (35%) were fully excluded.²

Overall, usable data were obtained from 86 (65%) of the 133 sections submitting data.

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

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

Reasoning in the Social Sciences: Competency by SLO



n = number of students included in the analysis for each 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 Spring 2021 semester, in the Core Concept of RNS, Virginia Tech offered 38 Pathways courses with a total of 363 sections. The following table indicates the number and percentage of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4
Courses (<i>n</i> =38)	38 (100%)	30 (79%)	22 (58%)	25 (66%)
Sections (<i>n</i> =363)	346 (95%)	351 (97%)	188 (52%)	188 (52%)

Assessment data were received from 22 courses (58%) and 355 sections (98%). Of the data received:

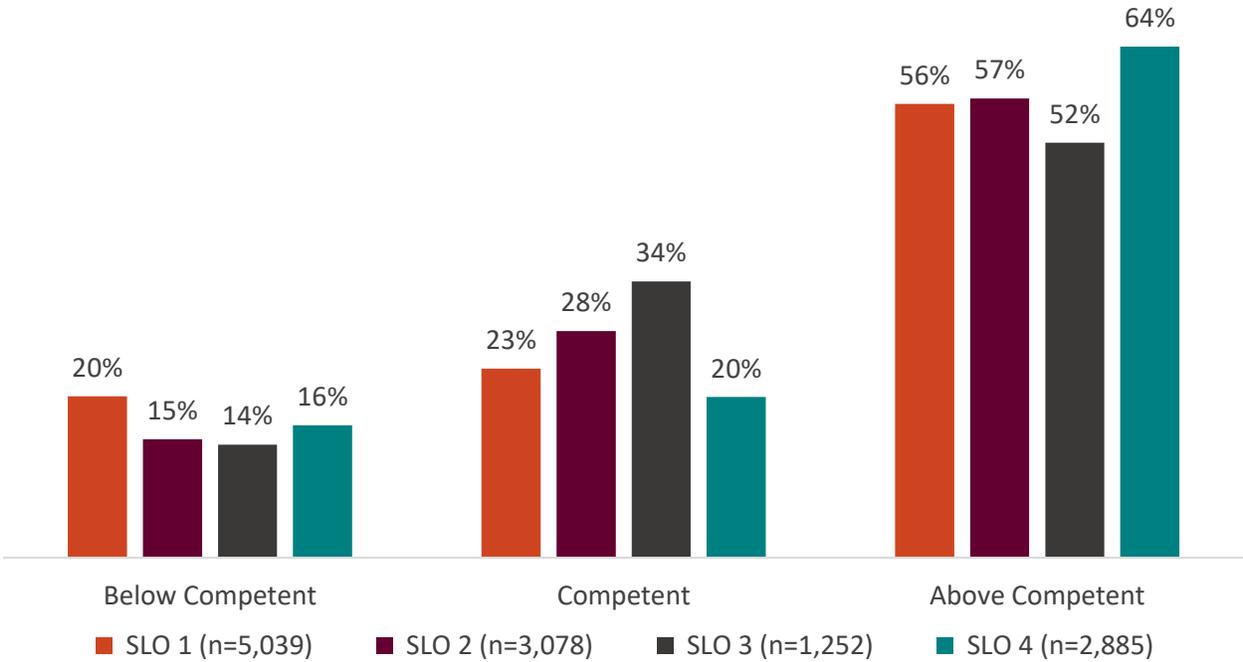
- 287 sections (81%) submitted data for all required SLOs.
- 68 sections (19%) were missing data for one or more required SLOs.
- 295 sections (83%) were fully included; 56 sections (16%) were partially included; and 4 sections (1%) were fully excluded.²

Overall, usable data were obtained from 351 (99%) of the 355 sections submitting data.

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

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

Reasoning in the Natural Sciences: Competency by SLO



n = number of students included in the analysis for each 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 Spring 2021 semester, in the Core Concept of QCT, Virginia Tech offered 50 Pathways courses with a total of 202 sections. The following table indicates the number and percentage of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4	SLO 5	SLO 6
Courses (<i>n</i> =50)	36 (72%)	44 (88%)	18 (36%)	28 (56%)	35 (70%)	37 (74%)
Sections (<i>n</i> =202)	173 (86%)	192 (95%)	29 (14%)	64 (32%)	173 (86%)	180 (89%)

Assessment data were received from 20 courses (40%) and 153 sections (76%). Of the data received:

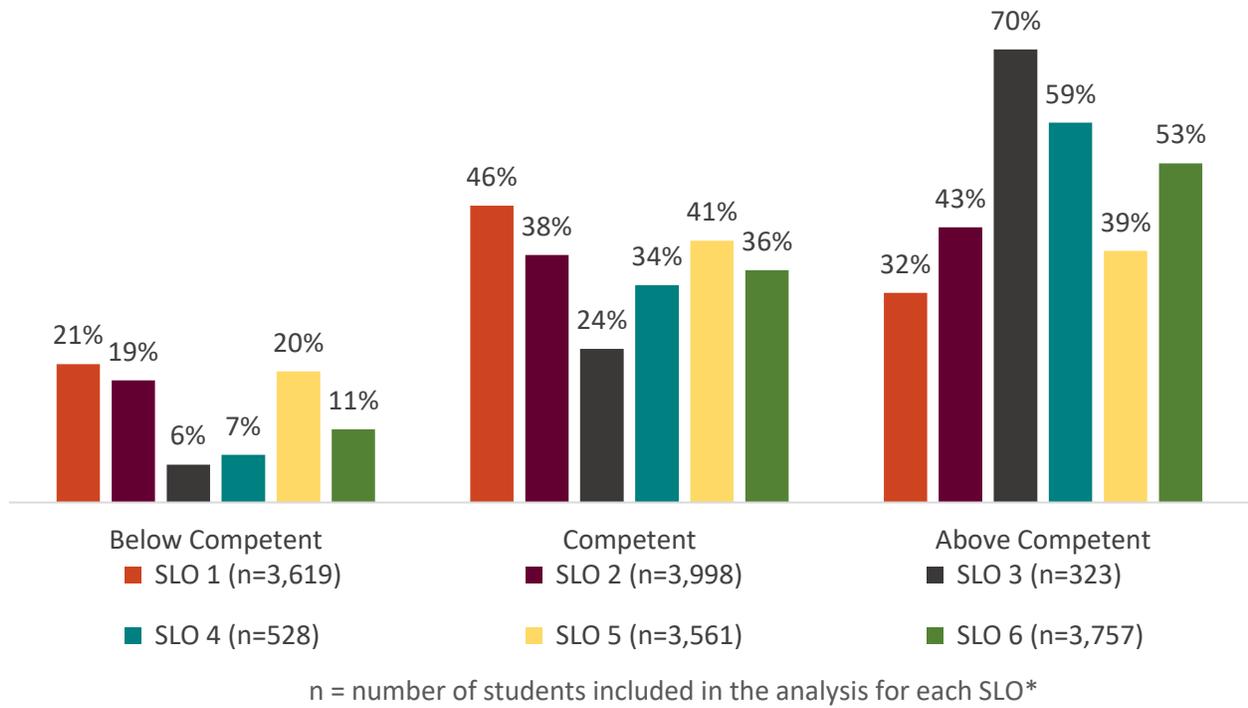
- 66 sections (43%) submitted data for all required SLOs.
- 87 sections (57%) were missing data for one or more required SLOs.
- 46 sections (30%) were fully included; 80 sections (52%) were partially included; and 27 sections (18%) were fully excluded.²

Overall, usable data were obtained from 126 (82%) of the 153 sections submitting data.

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

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

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 Spring 2021 semester, in the Core Concept of CPDA, Virginia Tech offered 54 Pathways courses with a total of 233 sections. The following table indicates the number and percentage of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4	SLO 5
Courses (<i>n</i> =54)	35 (65%)	25 (46%)	42 (78%)	37 (69%)	25 (46%)
Sections (<i>n</i> =233)	196 (84%)	46 (20%)	175 (75%)	167 (72%)	157 (67%)

Assessment data were received from 26 courses (48%) and 129 sections (55%). Of the data received:

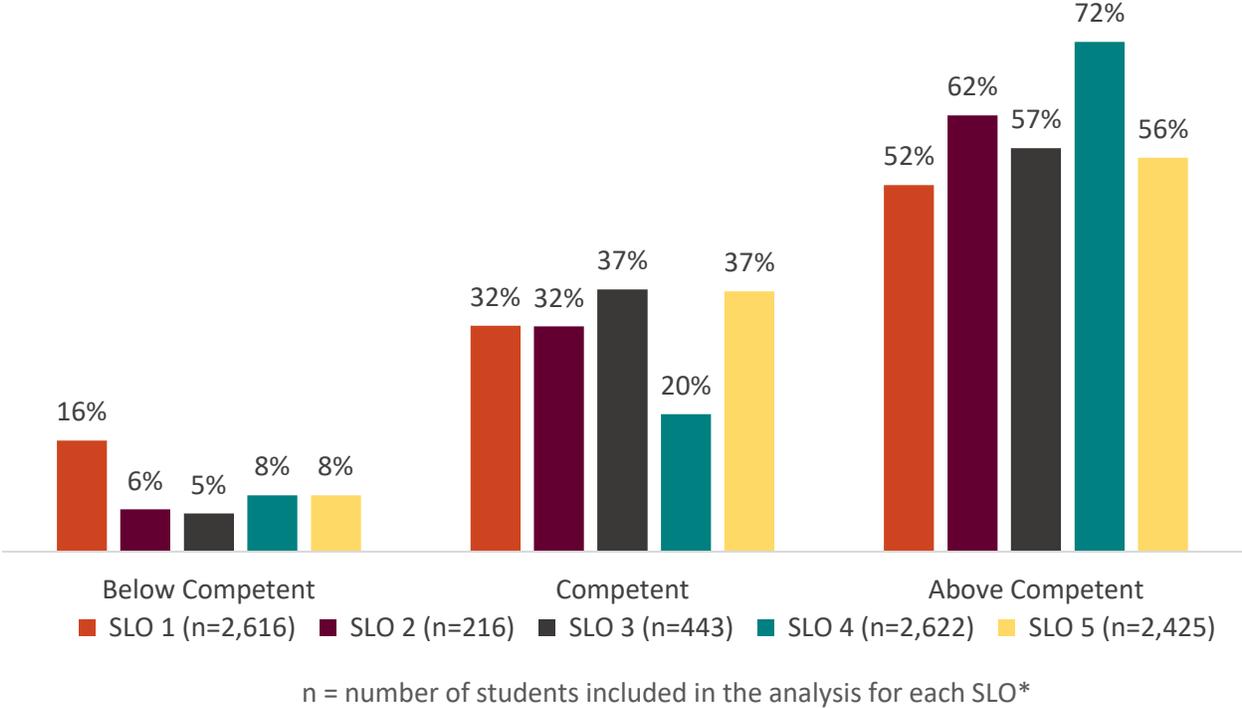
- 115 sections (89%) submitted data for all required SLOs.
- 14 sections (11%) were missing data for one or more required SLOs.
- 78 sections (60%) were fully included; 44 sections (34%) were partially included; and 7 sections (5%) were fully excluded.²

Overall, usable data were obtained from 122 (95%) of the 129 sections submitting data.

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

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

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 Spring 2021 semester, in the Core Concept of CAIEUS, Virginia Tech offered 53 Pathways courses with a total of 94 sections. The following table indicates the number and percentage of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3	SLO 4	SLO 5
Courses (<i>n</i> =53)	50 (94%)	40 (75%)	20 (38%)	16 (30%)	27 (51%)
Sections (<i>n</i> =94)	91 (97%)	77 (82%)	33 (35%)	27 (29%)	64 (68%)

Assessment data were received from 24 courses (45%) and 40 sections (43%). Of the data received:

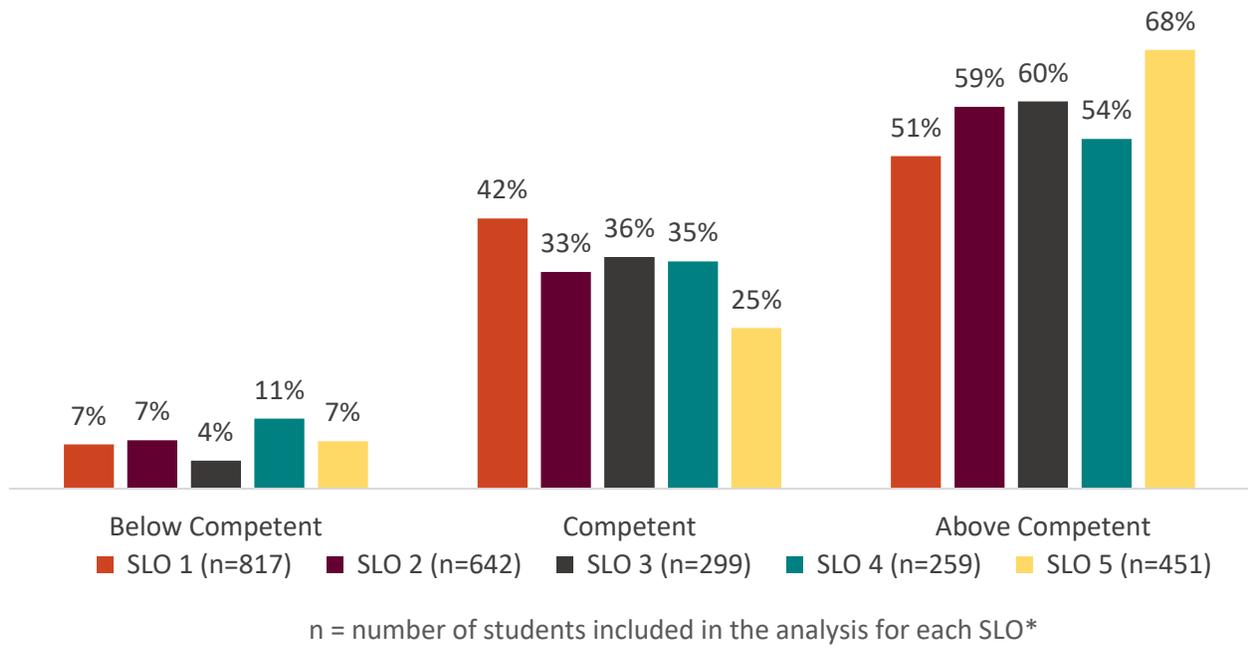
- 31 sections (78%) submitted data for all required SLOs.
- 9 sections (23%) were missing data for one or more required SLOs.
- 30 sections (75%) were fully included; 3 sections (8%) were partially included; and 7 sections (18%) were fully excluded.²

Overall, usable data were obtained from 33 (83%) of the 40 sections submitting data.

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

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

Critical Analysis of Identity and Equity in the US: 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 Spring 2021 semester, in the Integrative Concept of ER, Virginia Tech offered 164 Pathways courses with a total of 498 sections. The following table indicates the number and percentage of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3
Courses (<i>n</i> =164)	43 (26%)	148 (90%)	134 (82%)
Sections (<i>n</i> =498)	129 (26%)	464 (93%)	414 (83%)

Assessment data were received from 101 courses (62%) and 293 sections (59%). Of the data received:

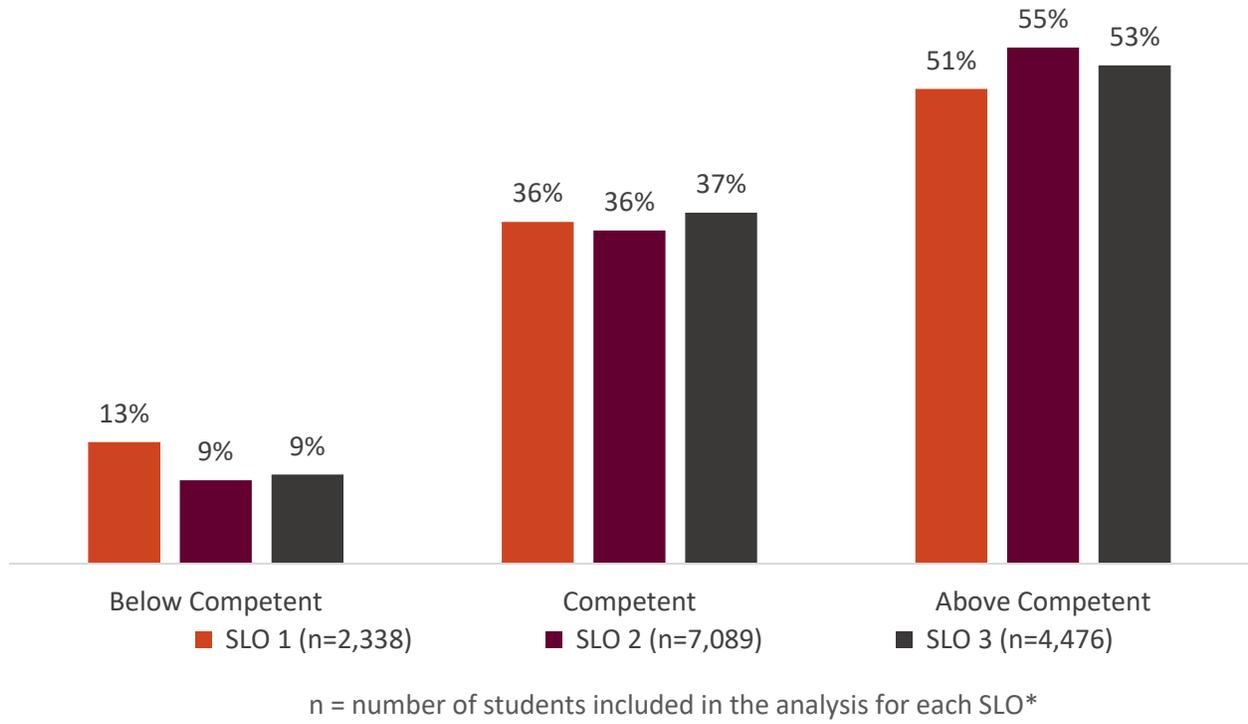
- 274 sections (94%) submitted data for all required SLOs.
- 19 sections (6%) were missing data for one or more required SLOs.
- 207 sections (71%) were fully included; 57 sections (19%) were partially included; and 29 sections (10%) were fully excluded.²

Overall, usable data were obtained from 264 (90%) of the 293 sections submitting data.

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

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

Ethical Reasoning: Competency by SLO



* 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 Spring 2021 semester, in the Integrative Concept of IGA, Virginia Tech offered 223 Pathways courses with a total of 968 sections. The following table indicates the number and percentage of offered courses and sections addressing each individual SLO.

	SLO 1	SLO 2	SLO 3
Courses (<i>n</i> =223)	161 (72%)	150 (67%)	149 (67%)
Sections (<i>n</i> =968)	657 (68%)	655 (68%)	653 (67%)

Assessment data were received from 125 courses (56%) and 686 sections (71%). Of the data received:

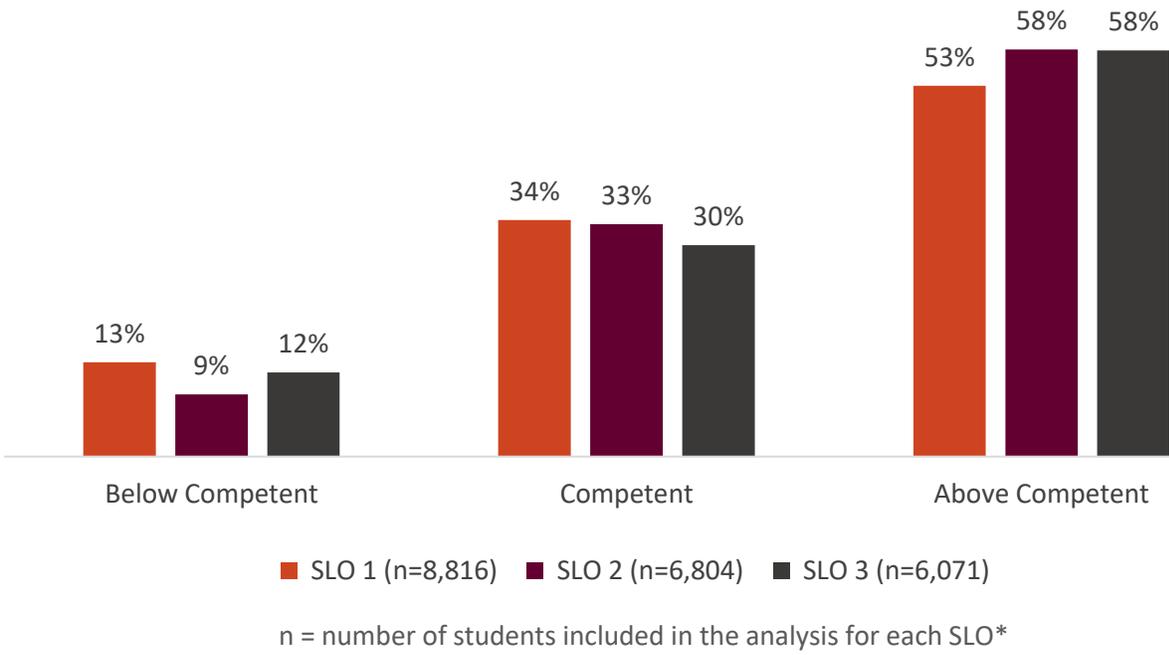
- 567 sections (83%) submitted data for all required SLOs.
- 119 sections (17%) were missing data for one or more required SLOs.
- 497 sections (72%) were fully included; 137 sections (20%) were partially included; and 52 sections (8%) were fully excluded.²

Overall, usable data were obtained from 634 (92%) of the 686 sections submitting data.

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

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

Intercultural and Global Awareness: Competency by SLO



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