

Reasoning in the Natural Sciences 2018-2019

Courses or course sequences addressing Reasoning in the Natural Sciences (RNS) must meet a majority of the student learning outcomes (SLOs). During the Fall 2018 and Spring 2019 semesters, Virginia Tech offered 44 Pathways courses that included the Core Concept of RNS.

	Overall
Pathways Sections Offering RNS	613
Pathways Sections Reporting RNS Data ¹	566 (92%)
Pathways Sections Included in Analyses ²	556 (91%)
Enrollment in Sections Offering RNS*	28,870
Enrollment in Sections Included in Analyses*	24,499 (85%)

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

Table 1: Competency Levels per SLO for RNS

	Sections Included in Analyses*	Students Included in Analyses	Percentage of Students		
			Below Competent	Competent	Above Competent
SLO 1: Explain the foundational knowledge of a particular scientific discipline.	548	12,168	22% (n=2,631)	38% (n=4,617)	40% (n=4,920)
SLO 2: Apply principles and techniques of scientific inquiry.	532	8,207	26% (n=2,131)	29% (n=2,419)	45% (n=3,657)
SLO 3: Evaluate the credibility and the use/misuse of scientific information.	285	2,420	25% (n=613)	38% (n=917)	37% (n=890)
SLO 4: Analyze the reciprocal impact of science and society.	272	7,275	13% (n=977)	19% (n=1,357)	68% (n=4,941)

* Includes sections required to report data for a specific outcome and additional sections reporting data.

¹ Eleven sections (2%) were missing data for one or more required SLOs; 555 sections (98%) provided complete data.

² Data from 538 sections (95%) were fully included; 18 sections (3%) were partially included; 10 sections (2%) were excluded.

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

	Sections Required to Report Data for SLO 1	Additional RNS Sections Reporting Data for SLO 1	Total Sections Included in Analyses of SLO 1
Pathways Sections Offering SLO 1	611	1	612
Pathways Sections Reporting Data	565 (92%)	1 (100%)	566 (92%)
Pathways Sections Included in Analyses	547* (90%)	1 (100%)	548 (90%)
Enrollment in Sections Offering RNS 1**	28,836	4	28,840
Students Included in Analyses**	12,164 (42%)	4 (100%)	12,168 (42%)

* Data from 18 sections were excluded.

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

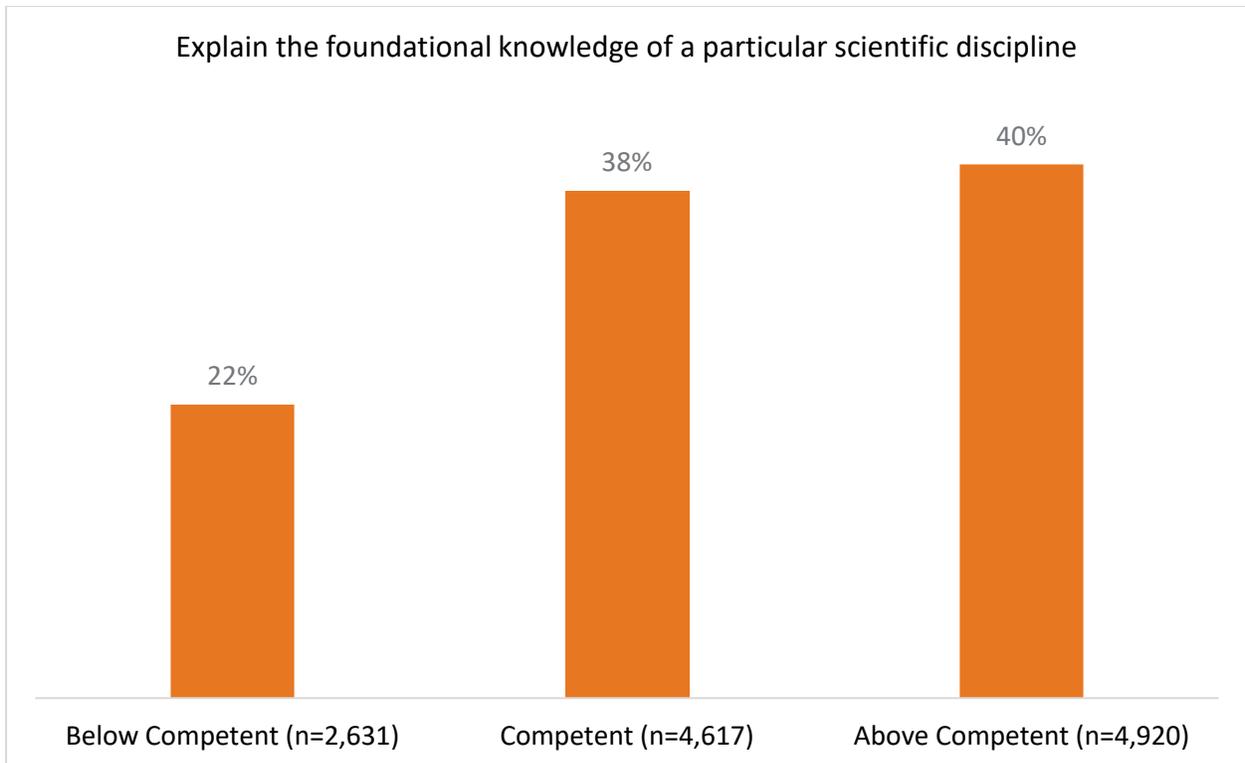


Figure 1. (n=12,168)

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SLO 2: Apply principles and techniques of scientific inquiry.

	Sections Required to Report Data for SLO 2	Additional RNS Sections Reporting Data for SLO 2	Total Sections Included in Analyses of SLO 2
Pathways Sections Offering SLO 2	599	4	603
Pathways Sections Reporting Data	554 (92%)	4 (100%)	558 (93%)
Pathways Sections Included in Analyses	528* (88%)	4 (100%)	532 (88%)
Enrollment in Sections Offering RNS 2**	27,372	469	27,841
Students Included in Analyses**	7,997 (29%)	210 (45%)	8,207 (29%)

* Data from 26 sections were excluded.

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

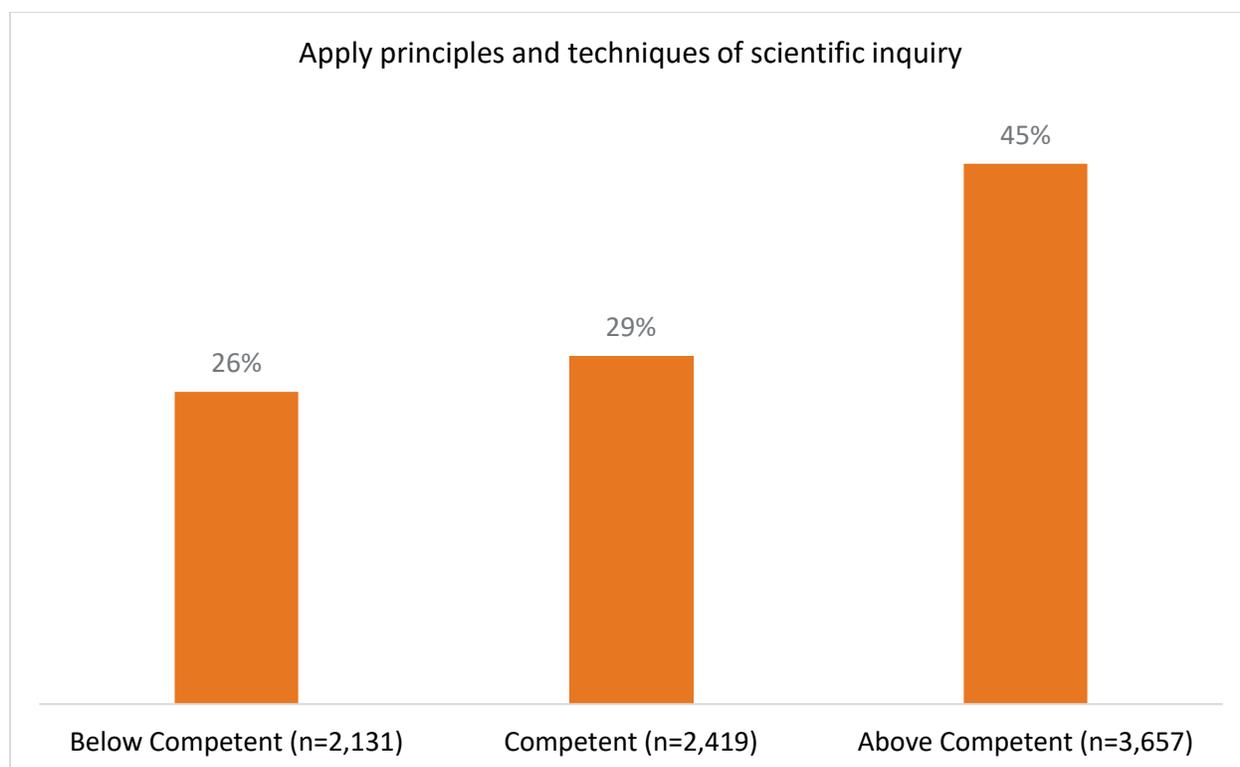


Figure 2. (n=8,207)

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

	Sections Required to Report Data for SLO 3	Additional RNS Sections Reporting Data for SLO 3	Total Sections Included in Analyses of SLO 3
Pathways Sections Offering SLO 3	330	2	332
Pathways Sections Reporting Data	288 (87%)	2 (100%)	290 (87%)
Pathways Sections Included in Analyses	283* (86%)	2 (100%)	285 (86%)
Enrollment in Sections Offering RNS 3**	14,597	242	14,839
Students Included in Analyses**	2,391 (16%)	29 (12%)	2,420 (16%)

* Data from 5 sections were excluded.

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

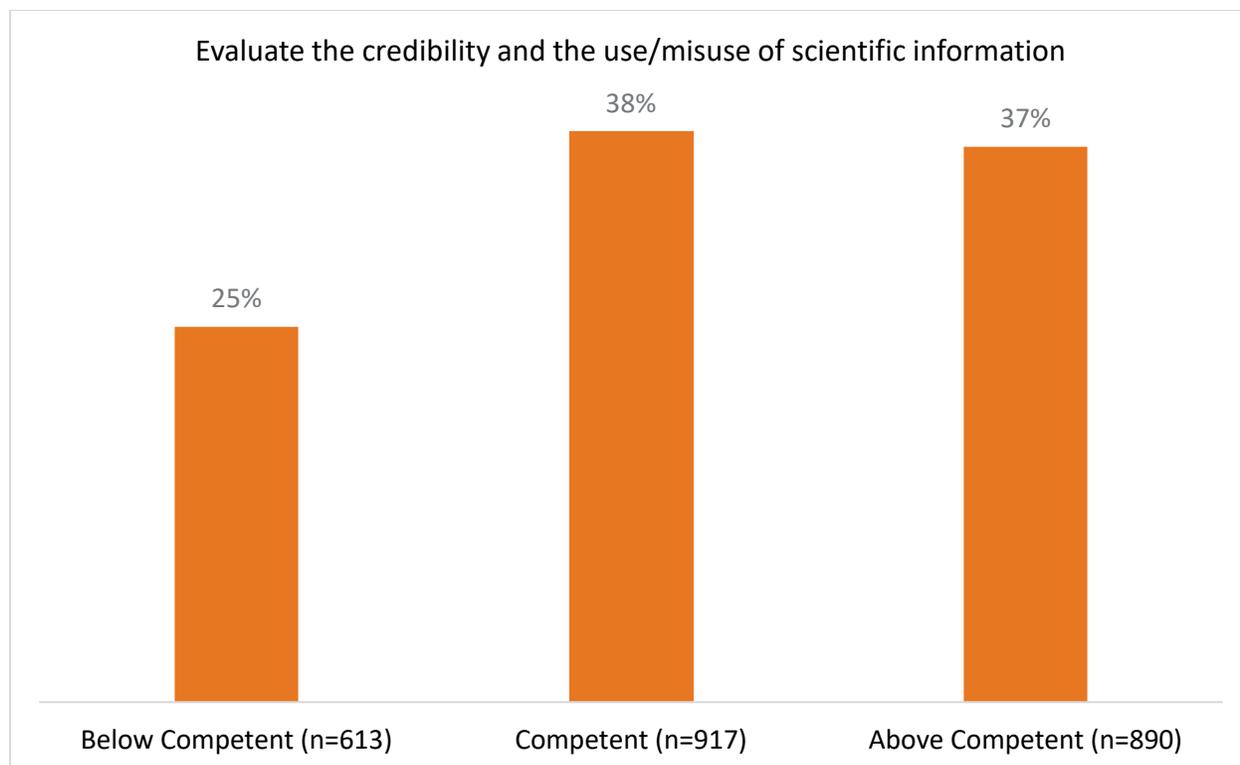


Figure 3. (n=2,420)

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

	Sections Required to Report Data for SLO 4	Additional RNS Sections Reporting Data for SLO 4	Total Sections Included in Analyses of SLO 4
Pathways Sections Offering SLO 4	299	3	302
Pathways Sections Reporting Data	279 (93%)	3 (100%)	282 (93%)
Pathways Sections Included in Analyses	269* (90%)	3 (100%)	272 (90%)
Enrollment in Sections Offering RNS 4**	16,112	54	16,166
Students Included in Analyses**	7,234 (45%)	41 (76%)	7,275 (45%)

* Data from 10 sections were excluded.

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

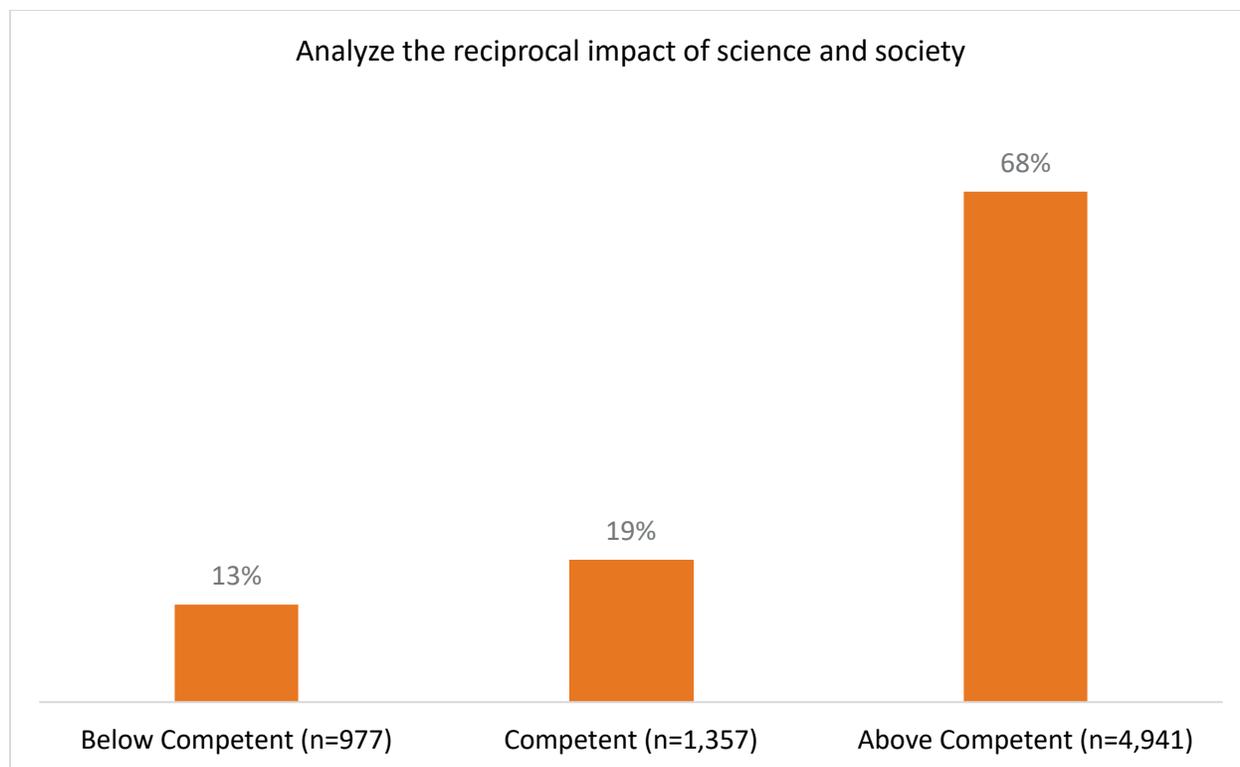


Figure 4. (n=7,275)