

Reasoning in the Natural Sciences 2020-2021

Courses or course sequences addressing Reasoning in the Natural Sciences (RNS) must meet a majority of the student learning outcomes (SLOs). During the Spring 2021 semester,¹ Virginia Tech offered 38 Pathways courses that included the Core Concept of RNS.

	Overall
Pathways Sections Offering RNS	363
Pathways Sections Reporting RNS Data ²	355 (98%)
Pathways Sections Included in Analyses ³	351 (97%)
Enrollment in Sections Offering RNS*	14,511
Enrollment in Sections Included in Analyses*	12,684 (87%)

* 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.	330	5,039	20% (n=1,011)	23% (n=1,184)	56% (n=2,844)
SLO 2: Apply principles and techniques of scientific inquiry.	263	3,078	15% (n=453)	28% (n=867)	57% (n=1,758)
SLO 3: Evaluate the credibility and the use/misuse of scientific information.	176	1,252	14% (n=176)	34% (n=430)	52% (n=646)
SLO 4: Analyze the reciprocal impact of science and society.	137	2,885	16% (n=475)	20% (n=576)	64% (n=1,834)

¹ 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 this report.

² 68 sections (19%) were missing data for one or more required SLOs; 287 sections (81%) provided complete data.

³ Data from 295 sections (83%) were fully included; 56 sections (16%) were partially included; 4 sections (1%) were excluded.

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

	Total Sections Included in Analyses of SLO 1
Pathways Sections Offering SLO 1	346
Pathways Sections Reporting Data	334 (97%)
Pathways Sections Included in Analyses	330* (95%)
Enrollment in Sections Offering RNS 1**	14,511
Students Included in Analyses**	5,039 (35%)

* Data from 4 sections were excluded.

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

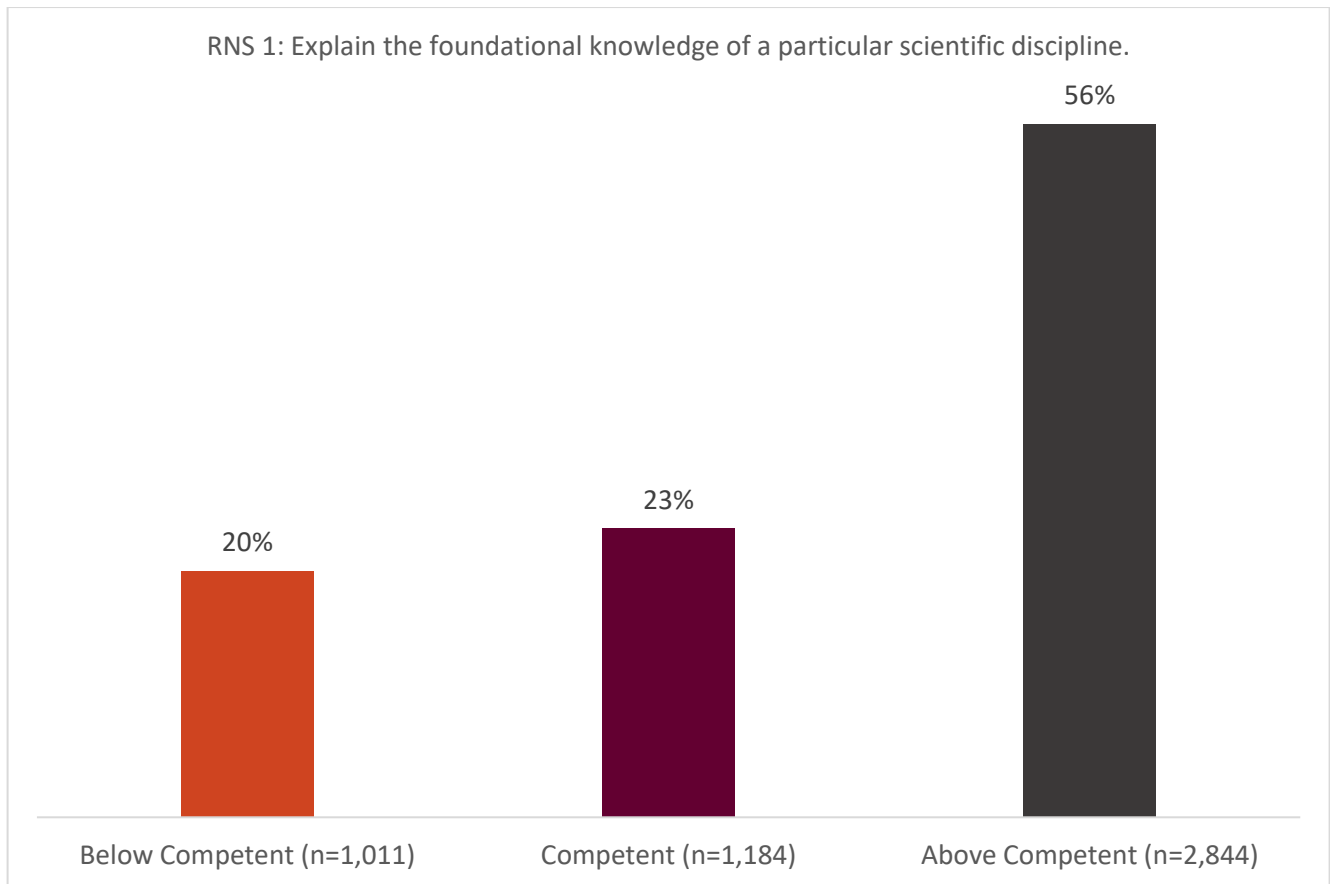


Figure 1. (n=5,039)

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SLO 2: Apply principles and techniques of scientific inquiry.

	Total Sections Included in Analyses of SLO 2
Pathways Sections Offering SLO 2	351
Pathways Sections Reporting Data	267 (76%)
Pathways Sections Included in Analyses	263* (75%)
Enrollment in Sections Offering RNS 2**	13,712
Students Included in Analyses**	3,078 (22%)

* Data from 4 sections were excluded.

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

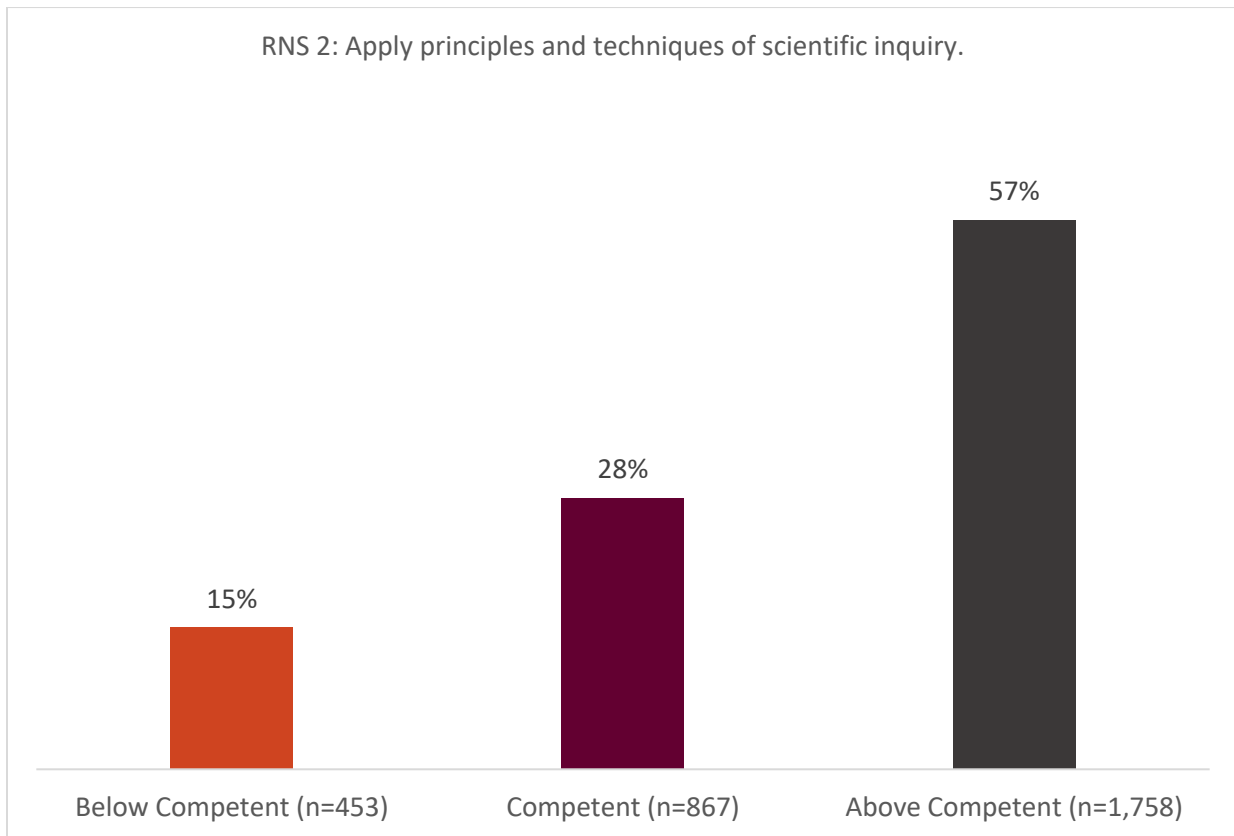


Figure 2. (n=3,078)

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

	Total Sections Included in Analyses of SLO 3
Pathways Sections Offering SLO 3	188
Pathways Sections Reporting Data	177 (94%)
Pathways Sections Included in Analyses	176* (94%)
Enrollment in Sections Offering RNS 3**	7,807
Students Included in Analyses**	1,252 (16%)

* Data from 1 section were excluded.

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

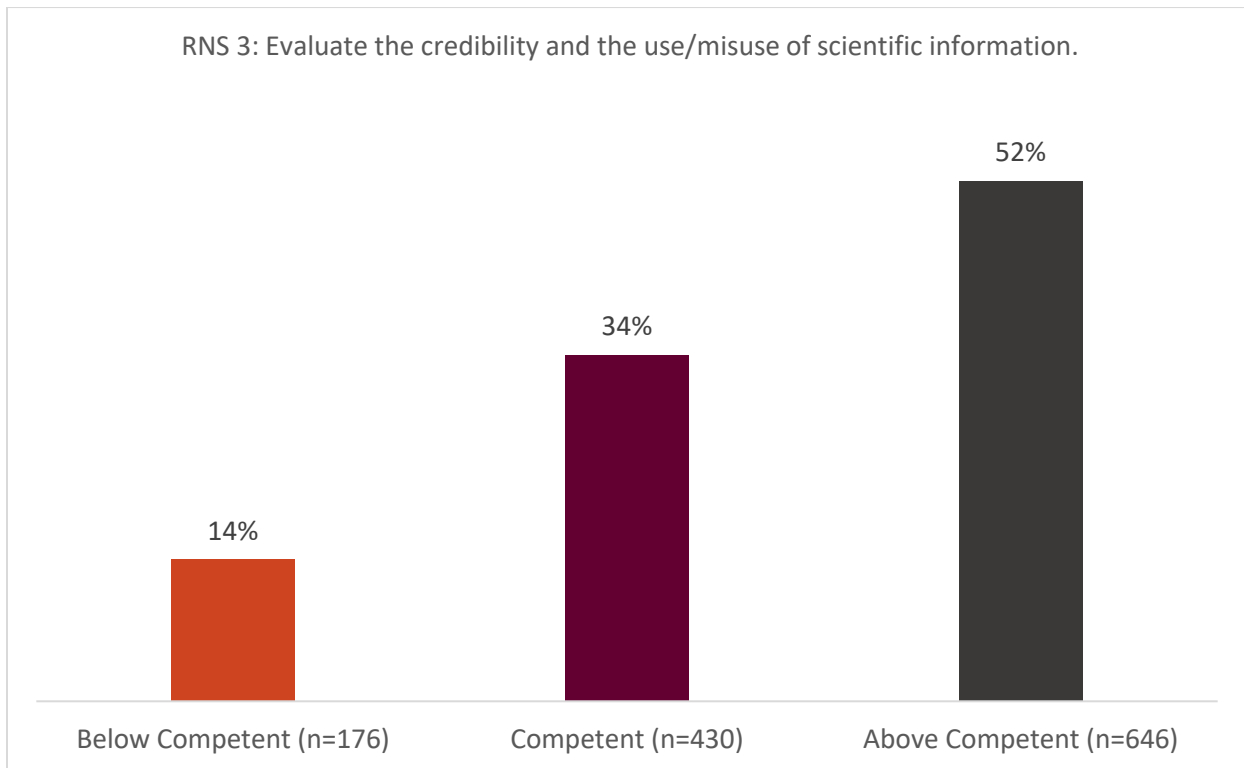


Figure 3. (n=1,252)

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

	Total Sections Included in Analyses of SLO 4
Pathways Sections Offering SLO 4	188
Pathways Sections Reporting Data	140 (74%)
Pathways Sections Included in Analyses	137* (73%)
Enrollment in Sections Offering RNS 4**	7,607
Students Included in Analyses**	2,885 (38%)

* Data from 3 sections were excluded.

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

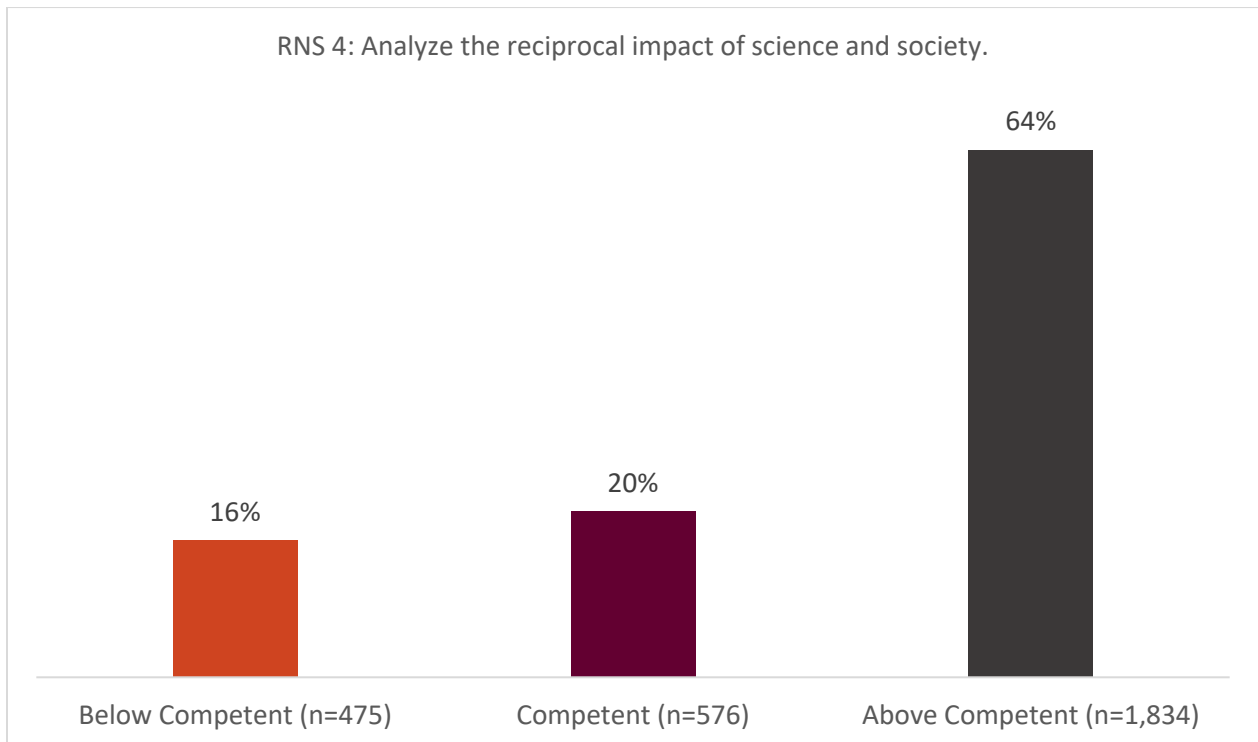


Figure 4. (n=2,885)