

College of Science, Bachelor of Science (BS) in **Statistics**
Check sheet for students graduating in calendar year **2019**

Instructions: Complete I. Core Requirements, II. Restricted Electives, and IV. CLE

I. CORE REQUIREMENTS* in STAT, MATH, CS, and ENGL (53 credits)

Statistics: Complete ALL of the following courses (33 credits)

STAT 3005	Statistical Methods (Pre: MATH 1225 ¹) (Co: MATH 1226 ¹)	(3)()
STAT 3006	Statistical Methods (Pre: 3005)	(3)()
STAT 3094	SAS Programming (Pre: 3005)	(3)()
STAT 3104	Probability and Distributions (Pre: (MATH 1226 ¹ or 2015 or 1026 or 1526), (STAT 3005 or 3615))	(3)()
STAT 4004	Methods of Statistical Computing (Pre: 4105, 4214)	(3)()
STAT 4024	Communications in Statistical Collaborations (Pre: STAT 4105, 4204) (Co: STAT 4214)	(3)()
STAT 4105	Theoretical Statistics (Pre: MATH 2204 ⁸)	(3)()
STAT 4106	Theoretical Statistics (Pre: STAT 4105)	(3)()
STAT 4204	Experimental Designs (Pre: STAT 3006 or 3616 or 4106 or 4706 or CMDA 2006)	(3)()
STAT 4214	Methods of Regression Analysis (Pre: STAT 3006 or 3616 or 4106 or 4706 or 5606 or 5616 or CMDA 2006)	(3)()
STAT/MATH 4584	Advanced Calculus for Statistics (Pre: (MATH 1114 or 2114 or 2114H), MATH 1225 ¹ , MATH 1226 ¹ , MATH 2204 ⁸)	
Or MATH 3224	Advanced Calculus (Pre: MATH 2204 ⁸ , MATH 3034 ⁵)	(3)()

Mathematics: Complete ALL of the following courses (14 credits)

MATH 1225 ¹	Calculus of a Single Variable	(4)()
MATH 1226 ¹	Calculus of a Single Variable (Pre: MATH 1225)	(4)()
MATH 2204 ⁸	Introduction to Multivariable Calculus (Pre: MATH 1226)	(3)()
MATH 2114	Introduction to Linear Algebra (Pre: MATH 1225 (B) or 1226 (P))	(3)()

Computer Science: Complete ONE of the following courses (3 credits)

CS 1064 ²	Introduction to Programming in Python	(3)()
CS 1114	Introduction to Software Design	

English: Complete the following course (3 credits)

ENGL 3764	Technical Writing (Pre: Junior Standing)	(3)()
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II. RESTRICTED ELECTIVES* (9 credits)

Complete THREE courses from the following list. At least ONE of the three must be STAT.

STAT 3504	Nonparametric Statistics (Pre: STAT 3006 or 3616 or 4106 or 4604 or 4706)	(3)()
STAT/CMDA/ CS 3654	Introductory Data Analytics and Visualization (Pre: (CS 1064 ⁹ , CMDA 2006) or (CS 1064 ⁹ , MATH 2204 ⁸ , STAT 3006, STAT 3104)) or (CS 1064 ⁹ , MATH 2204 ⁸ , (STAT 4705 or STAT 4714))	(3)()
STAT 4364	Introduction to Statistical Genomics (Pre: (MATH 2204 ⁸ , (STAT 3104 or STAT 4105 or STAT 4705), (STAT 3006 or STAT 3616 or STAT 4706)) or CMDA 2006)	(3)()
STAT 4444	Applied Bayesian Statistics (Pre: (MATH 2204 ⁸ , (STAT 3104 or STAT 4105 or STAT 4705), (STAT 3006 or STAT 3616 or STAT 4706)) or CMDA 2006)	(3)()
STAT 4504	Applied Multivariate Analysis (Pre: STAT 3006 or 4706 or 5606 or 5616 or CMDA 2006)	(3)()
STAT 4514	Contingency Table Analysis (Pre: STAT 3006 or 3616 or 4106 or 4706)	(3)()
STAT 4524	Sample Survey Methods (Pre: STAT 3006 or 3616 or 4106 or 4706)	(3)()
STAT 4534	Applied Statistical Time Series Analysis (Pre: STAT 3006 or 4104 or 4706 or 4714 or 3616 or BIT 2406 or CMDA 2006)	(3)()
STAT/CMDA/ CS 4654	Intermediate Data Analytics and Machine Learning (Pre: STAT/CMDA/CS 3654)	(3)()
STAT 4664	Computational Intensive Stochastic Modeling (Pre: CMDA 2006 ⁶)	(3)()
STAT/ AAEC 4804 ³	Elementary Econometrics (Pre: (STAT 3005 or 3604), AAEC 1006)	(3)()
STAT 4964 ⁴	Field Study ⁴	(3)()
Or STAT 4994 ⁴	Undergraduate Research ⁴	(3)()
BIT 3424 ^{5,7}	Introduction to Business Analytics Modeling (Pre: BIT 2406 or CS 1054 or 1114 or 1124 or 1705)	(3)()
BIT 3434 ^{5,7}	Advanced Modeling for Business Analytics (Pre: BIT 3424)	(3)()
BIT 4544 ^{5,7}	Advanced Methods in Business Analytics (Pre: BIT 3444 or ACIS 2504)	(3)()
CS 4234 ⁵	Parallel Computation (Pre: CS 3214)	(3)()
ECE 4424/ CS 4824	Machine Learning (Pre: ECE 2574 (C-), (STAT 4604 (C-) or 4705 (C-) or 4714 (C-))	(3)()
MATH 3054 ⁵	Programming for Math Problem Solving (Co: MATH 2214)	(3)()
MATH 4454 ⁵	Applied Mathematical Modeling (Pre: MATH 3214)	(3)()
MATH 4225 ⁵	Elementary Real Analysis (Pre: MATH 3224)	(3)()
ISE 4404 ⁵	Statistical Quality Control (Pre: ISE 3414, STAT 4105, 4706)	(3)()
GEOG 4314 ⁵	Spatial Analysis in Geographic Information Systems (Pre: GEOG 4084)	(3)()
GEOG/GEOS 4354 ⁵	Introduction to Remote Sensing	(3)()

III. COMMENTS AND INSTRUCTIONS

Footnotes for Sections I and II.

- * Some courses listed on this checklist have prerequisites. Please consult the University Course Catalog or check with your advisor.

Courses included in calculating “in-major” GPA are all courses listed in Sections I and II, plus all additional STAT, MATH, & CS courses at 3000 or 4000-level and ISE courses at 3400 and 4400.
- 1 MATH 1225-1226 satisfy the CLE requirement for Area 5. The sequence MATH 1225-1226 is equivalent to taking all of the following: MATH 1205, MATH 1206, MATH 1224.
- 2 For transfer students from Computer Science, CS 1705 may substitute for CS 1064.
- 3 For Economic majors or minors, ECON 4304, Introduction to Econometric Methods, can substitute for STAT 4804.
- 4 A maximum of 3 credits from either 4964, Field Study (for internship or other summer experience), or STAT 4994, Undergraduate Research, may count as a Statistics elective with prior approval from the department.
- 5 An upper-level course that is not offered by the Department of Statistics. Be aware of *all* prerequisites.
- 6 CMDA 2006 is equivalent to all of the following: STAT 3006, STAT 3104, MATH 2214, MATH 2204⁸.
- 7 Be aware that priority enrollment is given to BIT majors.
- 8 MATH 2204 or any of the following equivalent courses: MATH 2224, MATH 2224H, MATH 2204H, MATH 2406H or CMDA 2005.
- 9 CS 1064 or any of the following: CS 1044, CS 1054, CS 1114

Progress Toward Degree (conditions required for continuing in the major):

- (1) Students must earn a C- or better in all MATH, STAT, or CS designated courses for the degree. Additionally, no MATH, STAT, or CS designated course for the degree may have been taken more than twice, including attempts ending in course withdrawal.
- (2) Upon having attempted 90 semester credits, students must have an in-major GPA of 2.0 or better. Courses used to calculate in-major GPA are stated in the first footnote of Section III.

Graduation Requirements:

Virginia Tech requires **120** credit hours to graduate. These credits must include the courses required for the major (see above section). Refer to the next page for a list of remaining course requirements. It is recommended that, upon attempting 72 credit hours, students will have completed STAT 3005, 3006, MATH 1225, 1226, 2114, 2204, and CS 1064 or 1114.

Additionally, students who have not completed 3 years of a single foreign language in High School must complete 6 semester hours of one foreign language at the college level; these credits **do not count** toward the 120 hours required to graduate. Students who have completed 2 years of a single foreign language in high school are required to successfully complete the second semester (1106) of a foreign language at the college level and these credits **do** count toward the required 120 hours.

To graduate, a student must have at least a 2.0 in-major GPA and overall GPA. **All required courses for Sections I and II must be passed with a grade of C⁻ or better.** If 120 credit hours are reached and a student does not meet the GPA requirement, the student must take additional in-major courses to raise the in-major GPA to a 2.0

IV. CURRICULUM FOR LIBERAL EDUCATION

Consult the University Undergraduate Course Catalogue or the Curriculum for Liberal Education Guide at <http://www.cle.prov.vt.edu/> for approved courses.

Area 1: Writing & Discourse (6 credits)

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Area 2: Ideals, Cultural Traditions, and Value (6 credits)

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Area 3: Society and Human Behavior (6 credits)

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Area 4: Scientific Reasoning & Discovery (6 credits)

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Area 5: Quantitative and Symbolic Reasoning (6 credits)

MATH 1205 or 1225 (3) () MATH 1206 or 1226 (3) ()

Area 6: Creativity & Aesthetic Experience (3 credits)

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Area 7: Critical Issues in a Global Context (3 credits)

_____ (3) ()

Free Electives (27-29 credits)

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