Computer Science

Computer Science Major

The computer science undergraduate programs, based on recommendations of the Association for Computing Machinery, consist of a core of courses required for majors and a large selection of service courses and advanced courses. A grade of 'C' or better is required in all Computer Science courses. In the core, students are offered an opportunity to study concepts, applications, and implementation techniques that provide a broad practical base for both further study and a career in computing. Through a variety of service courses, every student in the university is provided an opportunity to develop computer literacy or competency. Through advanced undergraduate and graduate courses, students are offered an opportunity for in-depth study of such topics as artificial intelligence, programming languages, mobile applications, computer networks, security, information assurance, office automation, bioinformatics, software development, data mining, and data base management systems. Students are encouraged to choose elective courses from related areas including business, economics, engineering, mathematics, operations research, and statistics.

After completing part of their studies, students will find many opportunities to work part time as a research assistant to a scientist on campus, or as an intern with a local business, applying what they have learned in the classroom. Cooperative education opportunities starting in the junior year are available.

The B.A. concentrates on web development. Students receive an applied grounding in application design, web development, and deployment.

The B.S. program provides the widest exposure to computing with emphasis on high level languages, software development and advanced mathematical concepts.

Computer Science Minor

A minor in Computer Science requires at least 18 semester hours of select computer science courses. A grade of 'C' or better is required in all courses applied toward the computer science minor.

Major Requirements

Major: Computer Science

Degree Type: B.S.
Required Degree Credits to Graduate: 122

General Education Requirements

First Year Experience (F):		
UNIV 189	Skills For Academic Success (Students transferring in 24 or more credits do not need to take UNIV 189.)	1
Communication (C):		
ENGL 110	College Composition I	3
ENGL 120	College Composition II	3
ENGL 321	Writing in the Technical Professions	3
or ENGL 324	Writing in the Sciences	
COMM 110	Fundamentals of Public Speaking	3
Quantitative Reasoning (R):		
MATH 165	Calculus I	4
Science & Technology (S):		10
A one-credit lab must be taken as a co-requisite with a general education science/technology course unless the course includes an embedded lab experience equivalent to a one-credit course. Select from current general education list		
Humanities & Fine Arts (A): Select from current general education list		6
Social & Behavioral Sciences (B): Select from current general education list		6
Wellness (W): Select from current general education list		2
Cultural Diversity (D): Select from current general education list		
Global Perspectives (G): Select from current general education list		
Total Credits		41

College Requirements

Bachelor of Science Degree - An additional 6 credits in Humanities and Social Sciences*

* Humanities and Social Sciences may be fulfilled by any course having the following prefix: ADHM, ANTH, ARCH, ART, CJ, CLAS, COMM, ECON, ENGL, FREN, GEOG, GERM, HDFS, HIST, LA, LANG, MUSC, PHIL, POLS, PSYC, RELS, SOC, SPAN, THEA, WGS, or any course from the approved list of general education courses in humanities and social sciences (general education categories A and B). These credits must come from outside the department of the student's major.

Major Requirements

A Grade of 'C' or better is required for all CSCI courses.

General Education Requirements		40
Science and Mathmatics College Requirements		6
B.S. Computer Science Core Requirements		
CSCI 160	Computer Science I	4
CSCI 161	Computer Science II	4
CSCI 213	Modern Software Development	3
CSCI 222	Discrete Mathematics	3
CSCI 313	Software Development for Games	3
CSCI 336	Theoretical Computer Science II	3
CSCI 366	Database Systems	3
CSCI 372	Comparative Programming Languages	3
CSCI 374	Computer Organization and Architechure	3
CSCI 415	Networking and Parallel Computation	3
CSCI 445	Software Projects Capstone *	3
CSCI 467	Algorithm Analysis	3
CSCI 474	Operating Systems Concepts	3
CSCI 489	Social Implications of Computers *	3
Computer Science Electives: Select 3 courses form the categories listed below. No more than 2 courses may come from any single category		9
Software Engineering:		
CSCI 413	Principles of Software Engineering	
CSCI 477	Object-Oriented Systems	
CSCI 488	Human-Computer Interaction	
Large Systems:		

CSCI 426	Introduction to Artificial Intelligence	
CSCI 458	Microcomputer Graphics	
CSCI 459	Foundations of Computer Networks	
Systems Modeling:		
CSCI 418	Simulation Models	
CSCI 453	Linear Programming and Network Flows	
CSCI 454	Operations Research	
Emerging Areas:		
CSCI 345	Topics on Personal Computers	
CSCI 469	Network Security	
CSCI 473	Foundations of the Digital Enterprise	
CSCI 476	Computer Forensics	
CSCI 479	Introduction to Data Mining	
Mathematics and Statistics:		
MATH 166	Calculus II	4
STAT 367	Probability	3
STAT 368	Statistics	3
Science:		
One Year Lab Science Sequence: Select one of the following sequences:		8-10
BIOL 126 & 126L & BIOL 220 & BIOL 220L	Human Biology and Human Biology Laboratory and Human Anatomy and Physiology I and Human Anatomy and Physiology I Laboratory **	
CHEM 121 & 121L & CHEM 122 & CHEM 122L	General Chemistry I and General Chemistry I Laboratory and General Chemistry II and General Chemistry II Laboratory **	
CHEM 150 & CHEM 160 & CHEM 151 & CHEM 161	Principles of Chemistry I and Principles of Chemistry Laboratory I and Principles of Chemistry II and Principles of Chemistry Laboratory II **	
GEOL 105 & 105L & GEOL 106 & GEOL 106L	Physical Geology and Physical Geology Lab and The Earth Through Time and The Earth Through Time Lab ***	
PHYS 211 & 211L & PHYS 212 & PHYS 212L	College Physics I and College Physics I Laboratory and College Physics II and College Physics II Laboratory **	
PHYS 251 & 251L & PHYS 252 & PHYS 252L	University Physics I and University Physics I Laboratory and University Physics II and University Physics II Laboratory **	
Additional Science Course: Select one additional science course that satisfies general education requirements		3
B.S. Degree Requirements: Potential of 11 credits to reach 122		11
Total Credits		122-124

* CSCI 445 Software Projects Capstone & CSCI 489 Social Implications of Computers form the department capstone. CSCI 445 is typically taken during the last spring semester and CSCI 489 is typically taken during the last fall semester prior to degree completion.

** Fulfills Gen Ed Req.

*** Fulfills Gen Ed & Global Perspective Req.

Major Requirements

Major: Computer Science

Degree Type: B.A.
Required Degree Credits to Graduate: 122

General Education Requirements

First Year Experience (F):		
UNIV 189	Skills For Academic Success (Students transferring in 24 or more credits do not need to take UNIV 189.)	1
Communication (C):		
ENGL 110	College Composition I	3
ENGL 120	College Composition II	3
ENGL 321	Writing in the Technical Professions	3
or ENGL 324	Writing in the Sciences	
COMM 110	Fundamentals of Public Speaking	3
Quantitative Reasoning (R):		
MATH 146	Applied Calculus I	4
or MATH 165	Calculus I	
Science & Technology (S):		
CSCI 114	Microcomputer Packages	3
A one-credit lab must be taken as a co-requisite with a general education science/technology course unless the course includes an embedded lab experience equivalent to a one-credit course. Select from current general education list		7
Humanities & Fine Arts (A): Select from current general education list		6
Social & Behavioral Sciences (B): Select from current general education list		6
Wellness (W): Select from current general education list		2
Cultural Diversity (D): Select from current general education list		
Global Perspectives (G): Select from current general education list		
Total Credits		41

College Requirements

Bachelor of Arts (BA) Degree - An additional 12 credits of Humanities and Social Sciences* and proficiency at the second year level in a modern foreign language.

* Humanities and Social Sciences may be fulfilled by any course having the following prefix: ADHM, ANTH, ARCH, ART, CJ, CLAS, COMM, ECON, ENGL, FREN, GEOG, GERM, HDFS, HIST, LA, LANG, MUSC, PHIL, POLS, PSYC, RELS, SOC, SPAN, THEA, WGS, or any course from the approved list of general education courses in humanities and social sciences (general education categories A and B). These credits must come from outside the department of the student's major.

Major Requirements

A Grade of 'C' or better is required for all CSCI courses.

General Education Requirements	40
Science and Mathematics College Requirements	12

B.A. Computer Science Core Requirements		
CSCI 159	Computer Science Problem Solving	3
CSCI 160	Computer Science I	4
CSCI 161	Computer Science II	4
CSCI 213	Modern Software Development	3
CSCI 222	Discrete Mathematics	3
CSCI 313	Software Development for Games	3
CSCI 366	Database Systems	3
CSCI 371	Web Scripting Languages	3
CSCI 445	Software Projects Capstone *	3
CSCI 488	Human-Computer Interaction	3
CSCI 489	Social Implications of Computers *	3
Related Courses		
COMM 260	Principles of Internet Web-Based Design	3
COMM 261	Introduction to Web Development	3
STAT 330	Introductory Statistics	3
STAT 331	Regression Analysis	2
Other Courses: Select these seven credits from the following areas:		7
Science (not CSCI)		
Engineering (not ENGR 311 or ENGR 312)		
Math (higher than MATH 147, but not MATH 165)		
Statistics (not STAT 330 or STAT 331)		
B.A. Degree Requirements: Potential of 16 credits to reach 122		16
Total Credits		122

* CSCI 445 Software Projects Capstone & CSCI 489 Social Implications of Computers form the department capstone. CSCI 445 is typically taken during the last spring semester and CSCI 489 is typically taken during the last fall semester prior to degree completion.

Minor Requirements

Computer Science Minor

Minor Requirements

Required Credits: 17

Required Courses		
CSCI 213	Modern Software Development	3
Choose one of the following two sequences:		7-8
CSCI 160 & CSCI 161	Computer Science I and Computer Science II	
CSCI 227 & CSCI 161	Computing Fundamentals I and Computer Science II	
Additional Electives: Select 7-8 credits (at least 3 credits must be CSCI 300-400 level).		7-8
Total Credits		17-19

Minor Requirements and Notes

- A minimum of 8 credits must be taken at NDSU.
- CSCI 155 can be substituted for either CSCI 160 Computer Science I or CSCI 227 Computing Fundamentals I.
- A grade of 'C' or better is required in all courses applied to the computer science minor.