Indiana State University

Computer Science

Academic Programs

- *BS in CS*
  - Concentrations - Information Science, Computing Science
- *Minor in CS*
- *MS in CS*
  - Concentrations - Academic, Professional, Bioinformatics

Program Features

- *Core programming*
- *Data structures*
- *Systems* - building/maintaining OS and key programs
- *Theory* - algorithms, efficiency
- *Applied areas* - database, web, networks, AI, data science
- *Software projects*
- *Theoretical understanding*

Related programs

- BS in IT
- BS in Cybercrim & Security
- MS in CS
- MS in ECT
- MS in Data Science & Analytics

Programming Languages

Python, C, C++, Javascript, Html/Css, Php, Sql, Java, R, Haskell, Prolog, assembly, UML, Bash, XML, Smalltalk, Eiffel, Ruby, Latex, Athena

Collaborations

Biomedical Big Data for ISU, The Center for Genomic Advocacy, Department of Biology, Department of Earth & Environmental Systems

Community Engagement

Association for Computing Machinery, programming contest, Middle School Science Bowl, High School Summer Honors, Pi Day, Coding Camp, Coder Dojo

Internships

NSA, Naval Surface Warfare Center, ISU SURE, Police Technical, ISU OIT, ISU

Grant Support

National Institutes of Health, National Science Foundation, Indiana Academy of Sciences, University Research Council, Center for Community Engagement

After Graduating

Positions programmer, software developer, software engineer, web, database, data science, systems, networking, mobile, cloud

Where Rolls Royce, myCOI, Hewlett-Packard, IBM, Budweiser, Liberty Mutual, Clabber Girl, FireEye, AIM Specialty Health, Genesys, Vincennes University, Indiana State University (OIT, CS, C&M), Oracle, Google, Los Alamos National Labs, NSA, Lockheed-Martin, ARINC, City of Terre Haute

PhD University of Arizona, University of Miami, UT-Dallas, UC-Merced, UC-Riverside, Louisville

More Information

Homepage - http://cs.indstate.edu
Jeff Kinne - jkinne@cs.indstate.edu

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Computer Science

High School

- *Programming* - take a class
- *Math* - do your best
- *For fun* - code.org

Looking for Colleges

- *Apply to* - a few of each of the types that you have a chance of getting into, visit at least one of each type
- *Universities applied to* - check for scholarships (some are not very competitive)
- *Talk to* - people from your HS similar to you who are at different types of colleges
- ***Most important* - you feel comfortable, will do well**

Picking a Major

- *Options* - keep at least two in mind
- *Related to CS* - IT, CIS, MIS

First Year in College

Work - 10-20 hours/week preferred
Classes - more important than work
Most important classes - your major

College/University Types

2 year community college - *Ivy Tech*
least expensive, faculty positions not as competitive, might prepare you to transfer to university to finish BS, faculty only need to teach

Regional university - *ISU*
affordable, students of all types, faculty positions competitive, faculty teach and do research, exposure to graduate coursework/research

Small private - *Depauw, Butler*
expensive, mostly strong students, faculty mostly teach / do some research, fewer majors to choose from, not many graduate programs, better brand name

Research university - *Purdue, IU*
affordable, mostly strong students, faculty positions more competitive, faculty mostly do research and get promoted by work with PhD students, large classes supported by armies of PhD students, better brand name

Ultra-competitive - *MIT*
best students, competition amongst students, similar for faculty, can have good financial aid, best brand name

Internships

- Large companies, DOE labs, government, tech companies, Indeed.com, university job fairs
- Start looking mid-fall for summer positions
- Look for positions during first year, may not get one

MS Programs

- *End of BS* - apply for jobs, if you get a good one take it, if not MS is a good option
- *ISU* - GA possible - tuition waiver, stipend, experience

Computer Science

- *Meritocracy* - put in more time, you'll do better
- *Jobs* - yes!
- *Good pay* - yes!
- *But* - you have to enjoy it
- *What it's like* - programming, debugging, figuring things out, make it faster / more usable / etc., learning new tools / techniques

More Information

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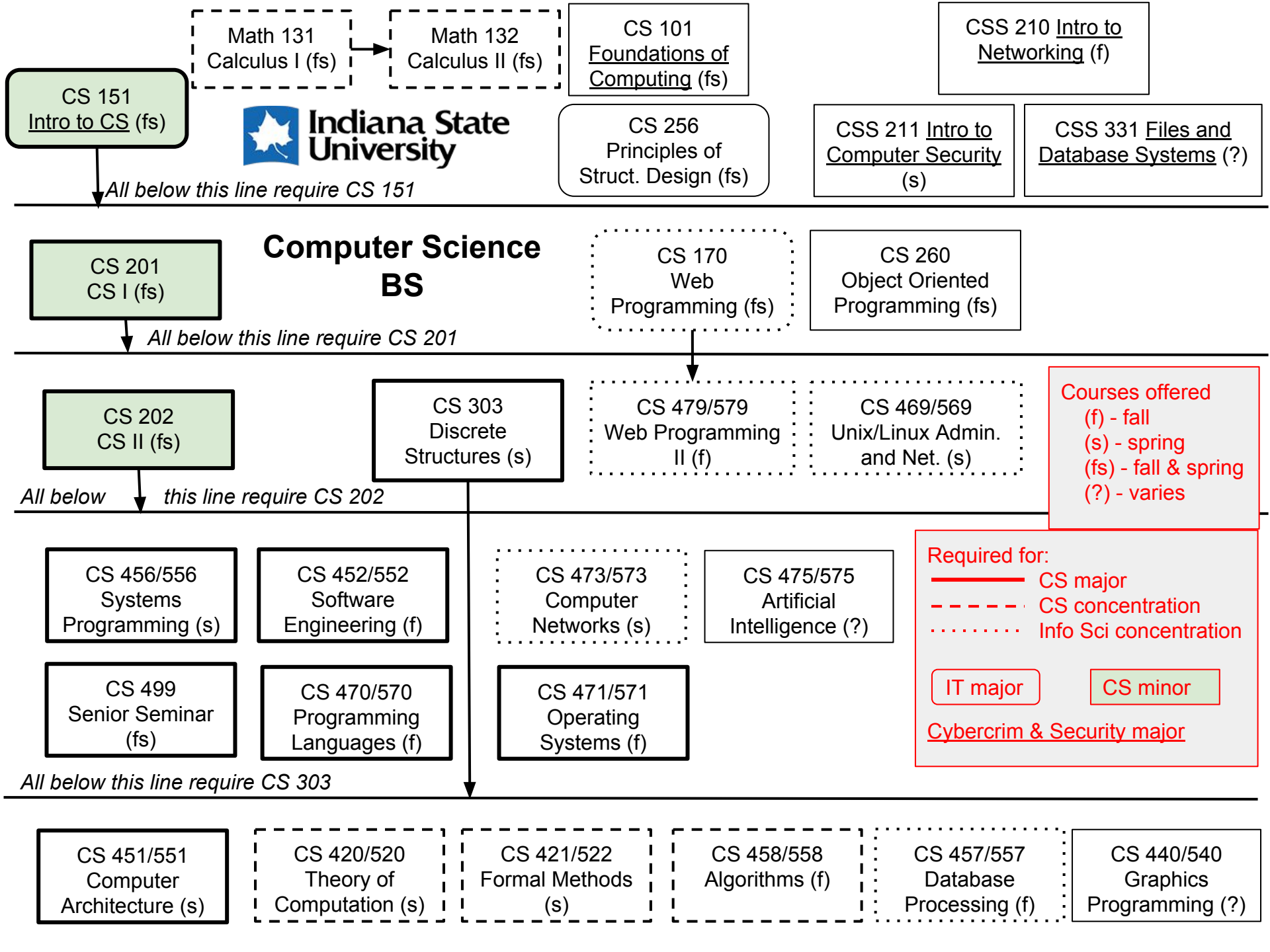
Math 131 Calculus I (fs)
Math 132 Calculus II (fs)
CS 101 Foundations of Computing (fs)
CSS 210 Intro to Networking (f)
CS 151 Intro to CS (fs)
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CS 256 Principles of Struct. Design (fs)
CSS 211 Intro to Computer Security (s)
CSS 331 Files and Database Systems (?)
All below this line require CS 151
Computer Science BS
CS 201 CS I (fs)
CS 170 Web Programming (fs)
CS 260 Object Oriented Programming (fs)
All below this line require CS 201
CS 202 CS II (fs)
CS 303 Discrete Structures (s)
CS 479/579 Web Programming II (f)
CS 469/569 Unix/Linux Admin. and Net. (s)
Courses offered
(f) - fall
(s) - spring
(fs) - fall & spring
(?) - varies
All below this line require CS 202
CS 456/556 Systems Programming (s)
CS 452/552 Software Engineering (f)
CS 473/573 Computer Networks (s)
CS 475/575 Artificial Intelligence (?)
Required for:
CS major
CS concentration
Info Sci concentration
CS 499 Senior Seminar (fs)
CS 470/570 Programming Languages (f)
CS 471/571 Operating Systems (f)
IT major
CS minor
Cybercrim & Security major
All below this line require CS 303
CS 451/551 Computer Architecture (s)
CS 420/520 Theory of Computation (s)
CS 421/522 Formal Methods (s)
CS 458/558 Algorithms (f)
CS 457/557 Database Processing (f)
CS 440/540 Graphics Programming (?)

All Concentrations

- **Culminating Experience**
- **Electives** - so total # 600-level credits is at least 18 and total # credits (500/600-level) is at least 33
- **Choose a concentration** - *Academic*, *Professional*, *Bioinformatics*
- **ISU BS students** - cannot take 500 level course if you took the 400 level course for your BS

Culminating Experience - choose 1

- 685 Software Project (fs)
- 695 CS Research (fs)
- 699 CS Internship (fs)
- *Bioinformatics concentration only* - BIO 692 Research in Bio. (fs) or BIO 699 Master's Thesis (fs)

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Computer Science MS

Academic Concentration

- 3 600-level courses in Systems and Theory & Algorithms, at least 1 from each

Systems

- *Prereq - 556, 571, or 573*
- 671 Operating Systems II (s2)
- 673 Networking II (f2)
- 670 Concurrent Prog. (s2)

Theory and Algorithms

- *Prereq - 520 or 558*
- 620 Theory of Comp II (s2)
- 658 Algorithms II (s1)
- 621 Discrete Struct. II (f1)

Professional Concentration

- *CS Foundations*
- 3 600-level courses in *Interconnected Computing* and *Data Management & Analysis*, at least 1 from each

CS Foundations

- 500 Programming Fundamentals (fs)
- 600 Concrete Mathematics (f)

Bioinformatics Concentration

- *CS Foundations*
- *Biology/Bioinformatics*
- 557 Databases (f) or 617 Databases, Data Mining, and Big Data (f)

Data Management & Analysis

- 610 Survey of Programming Languages (s2)
- 611 Software Specification and Design (f1)
- 617 Databases, Data Mining, and Big Data (f)
- 618 Computational Biology (s1)

Biology/Bioinformatics

- BIO 581 Genome Science (f)
- BIO 587 Bioinformatics (s)
- BIO 680 Seminar: Evol. & Genetics (?)
- CS 618 Computational Biology (s1)

Interconnected Computing

- 602 Mobile and Cloud Comp. (s1)
- 603 Networking and Security (f2)
- 609 Web Programming and Applications (s)

Electives

Some have prereqs

Academic concentration oriented

501 Prog for Data Sci & Anal I, 520 Theory of Comp, 521 Formal Methods, 540 Graphics Programming, 551 Computer Architecture, 552 Software Engineering, 556 Systems Programming, 557 Database Processing, 558 Algorithms, 559 Topics in CS, 569 Unix/linux Administration and Networking, 570 Programming Languages, 571 Operating Systems, 573 Computer Networks, 575 Artificial Intelligence, 579 Web Programming II, 619 Trends in CS (s2), 652 Software Engineering II (f1), 680 Readings in CS (fs)

Concentration courses also