

KF-SCIS Program Changes

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Summary

| Degrees | Change |
|---------|-----------------------------------|
| All | CS1 Java->Python |
| | Update Stats |
| | Remove CGS1920 |
| All CS | Add COP3410 |
| | Add Career Readiness |
| BS-CS | Require Databases |
| | Swap Networks for Web Development |
| | Do Not Require CS0 |
| | Pre/Corequisite Triangle |
| All CY | Revamp Core |
| BS-CY | Flexible Math |
| | ENC Course |

All Degrees: Change #1: Move First Programming Course (CS1) From Java to Python

- Tiobe Popularity Index [1]
 - **Python ranked #1 by a factor of 3 (25.98%)**
 - +5.81% Year-over-Year Change (YYC)
 - #2: C++ (8.8%, YYC -1.94%), #3 C (8.65%, YYC -0.24%), #4 Java (8.35%, YYC -1.09%)
 - The following schools have all done the same in the past five years:
 - *University of Florida, UC San Diego, UC Irvine, Virginia, UMass, and Penn State (C++)*
- Curriculum Intentionality
 - CS1: Problem Solving (less heavy syntax)
 - CS2: Software Engineering (retain Java here)

COMPSC:[BS/BA],XCOMPSC:MN,IT:BS (SWEG Track)

CYBER:BS,IT:BA,IT:BS (DevOps Track)

[COP2210 - Programming I](#)

[COP2047 - Python Programming I](#)

[COP2250 - Java Programming](#)

[COP2047 - Python Programming I](#)

All Degrees: Change #1: Move First Programming Course (CS1) From Java to Python

- Impacted Courses

| Course | Prerequisite Change |
|----------------|---|
| COP3337 | COP2210 COP2047 |
| CGS3767 | COP2210 or COP2250 or COP2270 COP2047 |
| CEN3721 | COP2210 or COP2250 or equivalent COP2047 |
| COP3804 | COP2210 or COP2250 COP2047 |

- Downgraded Prerequisite

- Felt CS1 was enough

| Course | Prerequisite Change | Description |
|----------------|---|--------------------------|
| CIS4731 | COP3530 or COP3465 COP2047 and COT3100 | Intro to Blockchain |
| CIS3080 | COP3804 or COP3337 or equivalent COP2047 | Intro to Cloud Computing |

All Degrees: Change #2: Update Stats

- New information from MATH/STAT. As of 26-27:
 - **STA2122** and **STA3145** removed
 - Replacement: **STA2023**
- We must update our programs to reflect this

COMPSC:BA, CYBER:BS

[STA2023](#) may be replaced with [STA2122](#) or [STA3111](#)

DATASC2:BS

[STA2023](#) - Statistical Methods

OR [STA3111](#) - Statistics I

OR [STA3163](#) - Statistical Methods I

OR [STA3033](#) - Introduction to Probability and Statistics for CS

OR [STA2122](#) - Introduction to Applied Statistics

OR [STA3145](#) - Statistics for the Health Professions

OR [STA3193](#) - Statistics for Biology I

OR [STA4322](#) - Introduction to Mathematical Statistics II

All Degrees: Change #3: Remove CGS1920

- **CGS1920:** Introduction to Computing Field (1 credit). Outcomes:
 - *Be familiar with:* degrees, career opportunities, professional org
 - *Master:* (Mainly KF-SCIS) CS, IT and CY degree programs
 - *Be exposed to:* (Mainly KF-SCIS) REU, graduate programs
- Not a prereq or coreq for any course
 - On one hand it makes no sense to be
 - But then most currently take it as seniors, which defeats the purpose
 - And some actually fail it, mostly out of nonchalance, but still hurts graduation rates
 - **All that aside**, we do not see it as necessary for a Bachelor's Degree
 - Just communicate this information to students

COMPSC:BA, COMPSC:BS, IT:BS, CYBER:BS

[CGS1920 - Introduction to the Field of Computing](#)

CS Degrees: Change #1: Addition of COP3410

- **COP3410: Computational Thinking (3 credits)**
 - Teaches problem decomposition, abstraction, and the ability to reason about, evaluate, refine solutions
- The importance of these skills is greater than “syntax” and “coding”, especially in the GenAI era

COMPSC:BA, COMPSC:BS, XCOMPSC:MN

COP3410 – Computational Thinking

| Course | Corequisite Change |
|---------|----------------------------|
| COP3337 | MAD2104 COP3410 |

- Also removing MAD2104, as it is a co-requisite for COP2047, which is a prerequisite for COP3337 (redundant)

CS Degrees: Change #2: Career Readiness

- List of courses classified under “Career Readiness”:
 - **CIS3590** – Internship Ready Software Development
 - **CIS4257** – Empowering Emerging Tech Talent
 - **CIS4912** – Research Experience for Undergraduates
 - **CIS4947** – Career Readiness
- Allow (not require) students to take up to 6 credits from this group towards elective credit

COMPSC:BA, COMPSC:BS

Remaining credits must be taken either from these elective groups **OR at most 6 credits from the group (CIS4947, CIS4912, CIS4257, CIS3590).**

BS-CS: Change #1: Require Databases

- **COP4710** (Database Management)
 - Database systems underpin nearly every contemporary application domain (web, datascience, cyber, enterprise, AI-driven)

COMPSC:BS

[COP4710 – Database Management](#)

- Side note: Removed **COP3530** co-requisite
 - Not even used in the course
 - COP4710 used to be an elective; we wanted people far enough through



BS-CS: Change #2: Swap Networks for Web Development

- **Out: CNT4713** (Net-Centric Computing)
- **In: COP4849** (Web Sys Development). Emphasis:
 - Full-stack, cloud deployment, responsible use of Gen AI, secure communication, applied cryptography
 - Two years ago we required CNT4713 because it had security (ABET)
 - COP4849 will uphold this (secure communication, applied cryptography)

COMPSC:BS

[CNT4713 - Net-centric Computing](#)

[COP4849 – Web Systems Development \(new course\)](#)

BS-CS: Change #3: Do Not Require CS0

- Remove requirement: “CGS1920 or COP1000 or IDC1000”
 - **COP1000/IDC1000** are essentially “CS0” courses
 - Designed to introduce people to CS who have never programmed before
 - We used to say “if you took CS0, you don’t have to take CGS1920”
 - But if we remove CGS1920, we require CS0 – which we don’t want
 - Not even a prerequisite for CS1, and many students enter with CS1

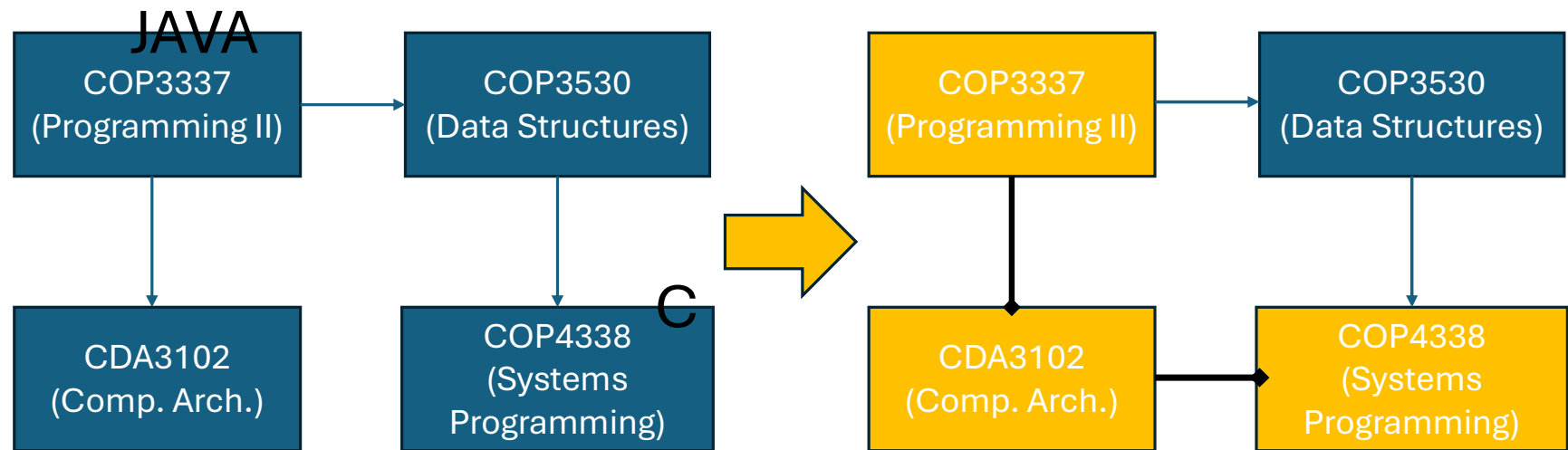
COMPSC:BS

~~CGS1920 - Introduction to the Field of Computing~~

~~OR COP1000 - Introduction to Computer Programming~~

~~OR IDC1000 - Computer Science for Everyone~~

BS-CS: Change #4: Pre/Co-requisite Triangle



- CDA3102 can be done with basic programming concepts (loops, conditionals, functions)
- CDA3102 and COP4338 are more intimately intertwined than the current curriculum reflects

CY Degrees: Change #1: Revamp Core

- KF-SCIS initiative to upgrade our BS in Cybersecurity
 - Ad-hoc committee: faculty and industry partners
- Key concepts to emphasize in the core (cf. ABET, ACM, NCAE-C)
 - Scripting
 - Risk
 - Policy
 - Socio-Technical Impacts
 - Governance
 - Cloud
 - Forensics
 - AI
 - Security

CY Degrees: Change #1: Revamp Core

| Key Concepts | CYBER:BS | Rationale |
|--|---|---|
| Scripting Risk Policy Socio-Tech. Governance Cloud Forensics AI Security | CGS1540 - Introduction to Databases for All OR CTS1500 - Emerging Topics in Digital Life OR CTS1120 - Fundamentals of Cybersecurity | We want them to take CTS1500 or CTS1120 (we already require a database course COP4703) |
| | GOP2270 - Secure C Programming For Engineers | We want to emphasize scripting (which they now have w/Python) |
| | PHY2053 - Physics without Calculus I | Legacy ABET requirement |
| | IDC2002 - AI For All | Early experience with AI |
| | GEN3721 - Introduction to Human-Computer Interaction CIS3080 - Cloud Essentials CIS4121 - Applied IT Security (new course) CIS4203 - Digital Forensics CIS4356 - Risk and Threat Management (new course) GNT4182 - Mobile and IoT Cybersecurity Policies and Practices | Adding: Cloud, Security, Forensics, Risk/Threat Management Removing: HCI and Mobile/IoT (latter is still an elective but not core) |
| | XCYBER:MN | Rationale |
| | GOP2270 - Secure C Programming For Engineers | We want to emphasize scripting (which they now have w/Python) |

BS-CY: Change #2: Flexible Math

- Our BS-CY was requiring **MAC1147** (Pre-Calc Algebra/Trig)
 - All non-Calc ready KF-SCIS programs require **MAC1140** (Pre Calc Algebra)
 - UPC/Faculty agreed, **MAC1140** would be adequate here as well
 - Note because **MAC1147** is higher level, it would still count

CYBER:BS

[MAC1147 - Pre-Calculus Algebra and Trigonometry](#)

[MAC1140 - Pre-Calculus Algebra](#)

BS-CY: Change #3: ENC Course

- **CGS3095** (Tech. in Global Arena) is required by all KF-SCIS degrees
 - Prerequisite: **ENC3213** OR **ENC3249**
 - BS-CY only listed **ENC3249**
 - All other KF-SCIS degrees had “ENC3213 or ENC3249”
 - Committee/faculty believe this was an error before, sees no reason

CYBER:BS

[ENC3213 – Professional and Technical Writing](#) OR

[ENC3249 - Professional and Technical Writing for Computing](#)

Summary

Courses on the right are in groups (I-K)
on Excel spreadsheet

| Degrees | Change | Course(s) Impacted |
|---------------|-----------------------------------|--|
| All | CS1 Java->Python | COP3337, CEN3721, COP3804, CGS3767, CIS3080, CIS4731 (prerequisites) |
| | Update Stats | N/A |
| | Remove CGS1920 | N/A |
| All CS | Add COP3410 | COP3337 (corequisite) |
| | Add Career Readiness | N/A |
| BS-CS | Require Databases | COP4710 |
| | Swap Networks for Web Development | COP4849 (new course) |
| | Do Not Require CS0 | N/A |
| | Pre/Corequisite Triangle | CDA3102, COP4338 |
| All CY | Revamp Core | CIS4121, CIS4365 (new courses) |
| BS-CY | Flexible Math | N/A |
| | ENC Course | N/A |