

Computer Science Concentration – CIS-CSID _____ Curriculum Sheet for **Fall 2007** Catalog (Side 1, see also reverse side)**CECS DISTRIBUTION Requirements 24**

ENGLISH COMPOSITION (6)
Composition Placement Exam required, and
Take both COMP 105 (3) & COMP 270 (3)

ECONOMICS (3)
ECON 201 (3) *Macroeconomics*

HUMANITIES (See Notes * & **)
Two courses, 100- to 400-level, 6 credits, from
AFRICAN/AFRICAN-AMERICAN (AAAS)
239, 275, 333, 385, 389, 469, 470

ART HISTORY (ARTH)
COMMUNICATIONS (COMM)
COMPARATIVE LITERATURE (COML)
ENGLISH (ENGL)
FILM STUDIES (FILM or JASS)
FOREIGN LANGUAGE
MUSIC HISTORY (MHIS)
PHILOSOPHY (PHIL)
SCIENCE/TECH STUDIES (STS)
300, 307, 312, 360, 403, 410, 485, 488
WOMEN/GEN STUDIES (WGST)
303, 385, 386, 387, 416, 425, 445, 487

BEHAVIORAL /SOCIAL SCIENCES **

Two courses, 100- to 400-level, 6 credits, from
AFRICAN/AFRICAN-AMERICAN (AAAS)
106, 275, 316, 320, 322, 325, 345,
349, 368, 369, 371, 386, 387, 403, 404

ANTHROPOLOGY (ANTH)
ECONOMICS (ECON)
ECON 202, ECON 300-level only
GEOGRAPHY (GEOG)
GEOG 201, 205, GEOG 300-level only
HISTORY (HIST)
POLITICAL SCIENCE (POL)
PSYCHOLOGY (PSYC)
SCIENCE/TECH STUDIES (STS)
300, 305, 308, 309, 321, 325, 340, 345,
349, 365, 374, 383, 385, 386, 409,
421, 430, 441, 442, 464
SOCIOLOGY (SOC)
WOMEN/GEN STUDIES (WGST)
303, 325, 326, 338, 362, 370,
405, 406, 407, 420, 446, 455, 3955

UPPER-LEVEL COURSE (3 credits)
One upper-level course, 300- or 400-level,
in same discipline as a course already taken
in Humanities or Behavioral/Social Sciences.

Game Design Track: for the 15 credits of Hum
and Beh or Social Sciences **MUST TAKE:**

- a) 3 courses (9 credits) from: JASS 240, 248,
315, 345, 350, 370, 403, or 410
b) 2 courses (6) in Behavioral/Social Sciences

* Note: AAAS, STS, and WGST disciplines
have different courses for Hum & BS/SS.

MATHEMATICS and SCIENCE 36

MATHEMATICS & STATISTICS (21)
MATH 115 (4) *Calculus I*
MATH 116 (4) *Calculus II*
CIS 275 (4) *Discrete Structures I*
CIS 306 (4) *Discrete Structures II*
IMSE 317 (3) *Probability/Statistics*
One of the following two (*Linear/Matrix Alg*)
MATH 227 (3) or MATH 217 (2)

LABORATORY SCIENCE SEQUENCE (8)

Two courses, 8 credits, in a sequence from:
BIOL 130 (4) and BIOL 140 (4)
or CHEM 134 (4) and CHEM 136 (4)
or CHEM 144 (4) and CHEM 146 (4)
or GEOL 118 (4) and GEOL 218 (4)
or PHYS 125 (4) and PHYS 126 (4)
or PHYS 150 (4) and PHYS 151 (4)

ADDITIONAL SCIENCE Course (4)

Four *additional* science credits from:

ASTR 130/131 [= old PHYS 130/131]
BIOL 130 BIOL 140
CHEM 134 CHEM 136 CHEM 144
CHEM 146 CHEM 225 CHEM 226
CHEM 227 GEOL 118 GEOL 218
PHYS 125 or PHYS 150
PHYS 126 or PHYS 151

Game Design Track MUST TAKE:

PHYS 125 (4) *Intro Physics I*
or PHYS 150 (4) *General Physics I*
as 4 of the 12 credits of required lab science

BUSINESS COURSE (3 credits)

ENGR 400 (3) *Applied Bus Techniques*

** **Avoid NO-CREDIT courses.**
NO-CREDIT courses posted by 2000 EC
and listed at end of CECS Handbook:
[www.engin.umd.umich.edu/SRA/pdf/
Student_Handbook.pdf](http://www.engin.umd.umich.edu/SRA/pdf/Student_Handbook.pdf) <link>

NO-CREDIT courses DON'T count for
the degree. NO-CREDIT courses include
ARTH 105, ECON 305, POL 300, PSYC 381,
SOC 383, STAT 325, and many others.
Check the list!

CIS COURSES & ELECTIVES 60

CIS CORE – 7 courses (28 credits)

CIS 150 (4) *Computer Science I*
CIS 200 (4) *Computer Science II*
CIS 310 (4) *Computer Organization
& Assembly Language*
CIS 350 (4) *Data Structures*
CIS 375 (4) *Software Engineering*
CIS 427 (4) *Computer Networks
& Distributed Systems*
CIS 450 (4) *Operating Systems*

CIS-CS Required (4)

CIS 4951 (2) *Design Seminar I*
CIS 4952 (2) *Design Seminar II*

CHOOSE ONE TRACK from:

- A) ENGINEERING SYSTEMS
B) GAME DESIGN
C) NETWORKING
D) SYSTEMS FOUNDATIONS
E) INDIVIDUALIZED COMPUTER SCIENCE

The Track courses, CIS-CS Electives, and
General Electives must **total 28 credits**
See reverse side for specific requirements.

CIS-CS ELECTIVES

Zero to 12 credits (depending on
which Track is chosen) from:
CIS 285 (3) *Software Engr Tools*
Only 1 of the following 3 courses may used
towards the 120 credits of the degree:
CIS 294, or CIS 296, or CIS 297 (3)

CIS 376 (4) *Software Engineering II*
CIS 381 (3) *Industrial Robotics*
CIS 387 (4) *Digital Forensics I*
CIS 400 (4) *Programming Langs*
CIS 405 (3) *Algorithm Analysis/Design*
CIS 421 (4) *Database Systems*
CIS 423 (3) *Dec Support & Expert Sys*
CIS 425 (4) *Information Systems*
[= old CIS 4261 (4) *Info Sys Dsgn I*]
CIS 4262 (4) *Information Sys Dsgn II*
CIS 435 (3) *Web Technology*
CIS 437 (3) *Advanced Networking*
CIS 447 (3) *Compt & Network Security*
CIS 451 (3) *Computer Graphics*
CIS 452 (3) *Computer Animation*
CIS 467 (4) *Digital Forensics II*
CIS 474 (3) *Compiler Design*
CIS 476 (3) *Softw Arch/Design Patterns*
CIS 479 (3) *Artificial Intelligence*
CIS 487 (3) *Computer Game Design I*
CIS 488 (3) *Computer Game Design II*
CCM 404 (3) *Dynamical Systems*
CCM 472 (3) *Numerical Analysis*
CCM 473 (3) *Matrix Computation*
ECE 372 (4) *Microprocessors*
ECE 473 (4) *Embedded Systems*
GENERAL ELECTIVES (7-10 credits)
depending on which Track is chosen. **At
least 6 credits must be outside CIS, math,
nat science, & engin.** See also notes. **

[See reverse
side – OVER]

REQUIREMENTS for the CIS-CS TRACKS

CHOOSE ONLY ONE CIS-CS TRACK, from below. (Track courses and appropriate electives must add up to **28 credits**)

A) **ENGINEERING SYSTEMS (Engineering Applications) Track (28 credits)** [21 + 7 = 28]

One course (3 credits) from: CIS 294 (3) *Visual Basic*, or CIS 296 (3), *Java Programming* or, CIS 297 (3), *C # Programming*
 CIS 381 (3) *Industrial Robotics*
 CIS 400 (4) *Programming Languages*
 CIS 435 (3) *Web Technology*
 ECE 372 (4) *Microprocessors*
 ECE 473 (4) *Embedded Systems*
 General Electives (7 credits) [At least 6 credits must be outside CIS, mathematics, natural science, and engineering.]**

B) **GAME DESIGN Track (28 credits)** [18 + 10 = 28]

CIS 297 (3) *C# Programming*
 CIS 451 (3) *Computer Graphics*
 CIS 452 (3) *Computer Animation*
 CIS 479 (3) *Artificial Intelligence*
 CIS 487 (3) *Computer Game Design I*
 CIS 488 (3) *Computer Game Design II*
 General Electives (10 credits) [At least 6 credits must be outside CIS, mathematics, natural science, and engineering.]**

- ▶ As part of the 24 credits of required distribution (first page), Game Design students **must take** the following 15 credits:
 - Three courses (9 credits) from: JASS 240, 248, 315, 345, 350, 370, 403, 410
 - Two courses (6 credits) in the Behavioral or Social Sciences, from the choices listed on page 1, Column I.
- ▶ As part of the 12 credits of required science courses (first page), Game Design students must take the following 4 credits:
 - Either PHYS 125 (4) OR PHYS 150 (4), as part of the 2-course lab science sequence or as the 3rd laboratory science course.

C) **NETWORKING Track (28 credits)** [20 + 8 = 28]

One course (3 credits) from: CIS 294 (3) *Visual Basic* OR, CIS 296 (3), *Java Programming* OR, CIS 297 (3), *C # Programming*
 CIS 400 (4) *Programming Languages*
 CIS 421 (4) *Database Systems*
 CIS 435 (3) *Web Technology*
 CIS 437 (3) *Advanced Networking*
 CIS 447 (3) *Introduction to Computer and Network Security*
 General Electives (8 credits) [At least 6 credits must be outside CIS, mathematics, natural science, and engineering.]**

D) **SYSTEMS FOUNDATIONS (Computer Science Foundations) Track (28 credits)** [20 + 8 = 28]

One course (3 credits) from: CIS 294 (3) *Visual Basic* or, CIS 296 (3), *Java Programming* or, CIS 297 (3), *C # Programming*
 CIS 400 (4) *Programming Languages*
 CIS 405 (3) *Algorithm Analysis and Design*
 CIS 421 (4) *Database Systems*
 CIS 474 (3) *Compiler Design*
 CIS 479 (3) *Artificial Intelligence*
 General Electives (8 credits) [At least 6 credits must be outside CIS, mathematics, natural science, and engineering.]**

E) **INDIVIDUALIZED (Computer Science) Track (28 credits)** [7 + 12 + 9 = 28]

One course (3 credits) from: CIS 294 (3) *Visual Basic*, or CIS 296 (3), *Java Programming*, or CIS 297 (3), *C # Programming*
 CIS 400 (4) *Programming Languages*
 CIS-CS ELECTIVES (12 credits) from side 1
 General Electives (9 credits) [At least 6 credits must be outside CIS, mathematics, natural science, and engineering.]**

** **Avoid NO-CREDIT courses.** List of NO-CREDIT courses is posted outside 2000 HPEC and listed at end of the CECS Handbook: www.engin.umd.umich.edu/SRA/pdf/Student_Handbook.pdf NO-CREDIT courses DON'T count for the degree. NO-CREDIT courses include ARTH 105, ECON 305, POL 300, PSYC 381, SOC 383, STAT 325, and many others. **Check the list!**