

**Wright State University, Department of Computer Science and Engineering**  
**Bachelor of Science Degree in Computer Science: Bioinformatics Concentration (ABET-CAC Accredited)**  
 Model Program

Total Hours: 194  
 Effective Spring, 2007

	<b>Fall</b>		<b>Winter</b>		<b>Spring</b>	
	<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
<b>Freshman</b>	CS 240 Computer Programming I	4	CS 241 Computer Programming II	4	CS 242 Computer Programming III	4
	MTH257 Discrete Mathematics	3	MTH229 Calculus I	5	MTH 230 Calculus II	5
	BIO 111 Human Biology	4	ENG 101 Composition I	4	BIO 115 Biodiversity and Ecology	4
	General Education	<u>4</u>	BIO 112 Cell Biology & Genetics	<u>4</u>	ENG 102 Composition II	<u>4</u>
		15		17		17
<b>Sophomore</b>	CEG 233 Linux and Windows	4	CS 400 Data Structures & Algorithms	4	CEG 320 Computer Organization	4
	MTH 231 Calculus III	5	MTH 253 Matrix Algebra	3	CS 271 Intro to Bioinformatics	4
	General Education	4	CHM 122 Macroscopic Chemistry	5	CHM 123 Reaction Dynamics	5
	CHM 121 Submicroscopic Chemistry	<u>5</u>	General Education	<u>4</u>	General Education	<u>4</u>
		18		16		17
<b>Junior</b>	CEG 433 Operating Systems	4	CEG 460 Software Engineering	4	CHM 213 Organic Chemistry III	4
	BIO 210 Molecular Biology	4	CHM 212 Organic Chemistry II	4	CHM 217 Organic Chemistry III Lab	2
	General Education	4	CHM 216 Organic Chemistry II Lab	2	General Education	4
	CHM 211 Organic Chemistry I	4	BIO 211 Molecular Genetics	<u>4</u>	BIO 212 Cell Biology	4
	CHM 210 Organic Chemistry Lab	<u>2</u>		14	BIO 213 Cell-Molecular Biology Lab	<u>2</u>
		18				16
<b>Senior</b>	CS 466 Intro to Formal Languages	4	CS 480 Comparative Languages	4	CS 405 Intro to Database Mgmt	4
	General Education	4	EGR 335 Technical Communications	3	CS 415 Social Implications of Comp	3
	CS 409 Principles of Artificial Intelligence	4	(or BIO 310)		Bio 492 Senior Seminar	1
	CS 471 Algorithms for Bioinformatics	<u>4</u>	CS/CEG Technical Elective	4	General Education	4
		16	CS/CEG Technical Elective	<u>4</u>	STT 363, STT360 or ISE301(Statistics)	<u>3</u>
				15		15

# BACHELOR of SCIENCE in COMPUTER SCIENCE - Bioinformatics Concentration

194 Hours, Effective Spring 2007

## I.

### COMPUTER SCIENCE AND ENGR COURSE

(58 hours)

#### A. Required Computer Science Courses (31 hours)

CS 240 Computer Programming I	4	_____
CS 241 Computer Programming II	4	_____
CS 242 Computer Programming III	4	_____
CS 400 Data Structures and Algorithms	4	_____
CS 405 Into to Database Mgmt Systems	4	_____
CS 415 Social Implications of Computing	3	_____
CS 466 Introduction to Formal Languages	4	_____
CS 480 Comparative Languages	4	_____

#### B. Required Computer Engineering Courses

(16 hours)

CEG 233 Linux and Windows	4	_____
CEG 320 Computer Organization.	4	_____
CEG 433 Operating Systems I	4	_____
CEG 460 Introduction to Software Eng	4	_____

#### C. CS/CEG Electives (8 hours)

Electives must be 400-level CS/CEG courses from the bioinformatics electives list to provide additional breadth in the discipline.

1. \_\_\_\_\_
2. \_\_\_\_\_

#### D. Technical Communication (3 hours)

EGR 335 Technical Communications		
OR BIO 310 Issues in Science	3	_____

## II. GENERAL EDUCATION (40 hours)

### Area I - Communication and Mathematical Skills

ENG 101 Composition I	4	_____
ENG 102 Composition II	4	_____
MTH – See required MTH/STAT courses		

### Area II – Cultural-Social Foundations-8 Hrs.

History – Select 1 Course:

CLS 150, HST 101, HST 102, HST 103

1. \_\_\_\_\_ 4 \_\_\_\_\_

The Non Western World (WI) – Select 1

Course: CSE/CST, RSE/RST, HLT 202, SW 272, URS 200

1. \_\_\_\_\_ 4 \_\_\_\_\_

### Area III – Human Behavior – 8 Hrs.

Select 2 Courses From *Different* Rows:

Economics: EC200 (Some WI), EC 290 (WI)

Political Science: PLS 200

Psychology: PSY 105

Sociology(WI): SOC200, SOC205

1. \_\_\_\_\_ 4 \_\_\_\_\_

2. \_\_\_\_\_ 4 \_\_\_\_\_

### Area IV – Human Expression – 4 Hrs.

Select one course:

Great Books (WI):

CLS, ENG, PHL or REL 204

Fine and Performing Arts:

ART, MUS or TH 214, MP 131 or MUS 290

1. \_\_\_\_\_ 4 \_\_\_\_\_

### Additional courses from areas II, III, and IV-8-Hrs.

Select one course from two of three areas. Except for Area II, the course selected must come from a different subcategory than the course(s) chosen to meet the area requirement.

(See undergraduate catalog – Gen. Ed. Section for complete details.)

1. \_\_\_\_\_ 4 \_\_\_\_\_

2. \_\_\_\_\_ 4 \_\_\_\_\_

### Area VI – College Component 4 Hrs.

Select any Area VI College of Liberal Arts course.

1. \_\_\_\_\_ 4 \_\_\_\_\_

## III. MATHEMATICS COURSES

(24 hours)

### A. Required Mathematics/Statistics Courses

(24 hours)

MTH 229 Calculus I 5 \_\_\_\_\_

MTH 230 Calculus II 5 \_\_\_\_\_

MTH 231 Calculus III 5 \_\_\_\_\_

MTH 253 Matrix Algebra 3 \_\_\_\_\_

MTH 257 Discrete Mathematics 3 \_\_\_\_\_

STT 363, STT360, or ISE 301 Statistics

1. \_\_\_\_\_

## IV. BIOINFORMATICS REQUIRED COURSES

(72 hours)

### A. Required Computer Science Courses

(12 hours)

CS 271 Intro to Bioinformatics 4 \_\_\_\_\_

CS 409 Intro to Artificial Intelligence 4 \_\_\_\_\_

CS 471 Algorithms for Bioinformatics 4 \_\_\_\_\_

### B. Required Chemistry Courses (33 hours)

CHM 121 Submicroscopic Chemistry 5 \_\_\_\_\_

CHM 122 Macroscopic Chemistry 5 \_\_\_\_\_

CHM 123 Reaction Dynamics 5 \_\_\_\_\_

CHM 211 Organic Chemistry I 4 \_\_\_\_\_

CHM 215 Organic Chemistry I Lab 2 \_\_\_\_\_

CHM 212 Organic Chemistry II 4 \_\_\_\_\_

CHM 216 Organic Chemistry II Lab 2 \_\_\_\_\_

CHM 213 Organic Chemistry III 4 \_\_\_\_\_

CHM 217 Organic Chemistry III Lab 2 \_\_\_\_\_

### C. Required Biological Sciences Courses (27 hours)

BIO 111 Human Biology 4 \_\_\_\_\_

BIO 112 Cell Biology and Genetics 4 \_\_\_\_\_

BIO 115 Biodiversity and Ecology 4 \_\_\_\_\_

BIO 210 Molecular Biology 4 \_\_\_\_\_

BIO 211 Molecular Genetics 4 \_\_\_\_\_

BIO 212 Cell Biology 4 \_\_\_\_\_

BIO 213 Cell-Molecular Biology Lab 2 \_\_\_\_\_

BIO 492 Senior Seminar 1 \_\_\_\_\_

General Education: Courses must be chosen to satisfy the University General Education requirements.

GENERAL ELECTIVES: Courses may be chosen from any area of study based on Department Electives Policy.

CS/CEG ELECTIVES. Refer to Bioinformatics Approved Electives List.

ALL ELECTIVE COURSES MUST BE APPROVED BY A DEPARTMENT ADVISOR.

Name \_\_\_\_\_ Date \_\_\_\_\_

Advisor/Mentor \_\_\_\_\_