

**LIBERAL ARTS AND SCIENCES: BACHELOR OF SCIENCE  
PHYSICS / ASTRONOMY TRACK**

| <b>V. MAJOR PROGRAM: 57 S.H.</b>        |            |             |
|---|------------|-------------|
| <b>A. CORE: 42 S.H.</b>                 | <b>Gr.</b> | <b>S.H.</b> |
| PHY 100 Physics I                       |            | 4           |
| PHY 102 Physics II                      |            | 4           |
| PHY 212 Modern Physics I                |            | 3           |
| PHY 214 Modern Physics II               |            | 3           |
| PHY 220WI Electronics                   |            | 3           |
| PHY 230 Optics                          |            | 3           |
| PHY 245 Mathematical Physics I          |            | 3           |
| PHY 312CT Classical Mechanics I         |            | 4           |
| PHY 315WI Advanced Lab                  |            | 3           |
| PHY 316QL Electricity and Magnetism I   |            | 3           |
| PHY 327 Thermo. and Stat. Mech.         |            | 3           |
| PHY 340 Computational Physics           |            | 3           |
| PHY 380CMWI Senior Seminar              |            | 3           |
| <b>B. ASTRONOMY TRACK: 15 S.H.</b>      |            |             |
| PHY 360 Quantum Mechanics I             |            | 3           |
| AST 140QL Planetary Science             |            | 3           |
| AST 142 Stellar & Galactic Astronomy    |            | 3           |
| AST 342 / PHY 342 Astrophysics          |            | 3           |
| AST XXX Any AST course above 200        |            | 3           |
| <b>VI. CONCOMITANT COURSES: 27 S.H.</b> |            |             |
| <b>A. CHEMISTRY: 8 S.H.</b>             |            |             |
| CHM 100 General Chemistry I             |            | 4           |
| CHM 102 General Chemistry II            |            | 4           |
| <b>B. MATHEMATICS: 15 S.H.</b>          |            |             |
| MAT 181 Calculus I                      |            | 4           |
| MAT 182 Calculus II                     |            | 4           |
| MAT 283 Calculus III                    |            | 4           |
| MAT 340 Differential Equations          |            | 3           |
| <b>C. BIOLOGY: 4 S.H.</b>               |            |             |
| BIO 104 Principles of Biology           |            | 4           |

| <b>VIII. GRADUATION CLEARANCE</b> |       |
|-----------------------------------|-------|
| A. Cumulative Q.P.A.              | _____ |
| B. Total Semester Hours           | _____ |
| a. General Education              | _____ |
| b. Major Program                  | _____ |
| c. Concomitant                    | _____ |
| <b>GRAND TOTAL</b>                | _____ |
| C. Comprehensive Exam Passed      |       |
| yes                               | no    |
| Advisor's Signature _____         |       |
| Date _____                        |       |

| <b>NOTES</b>  |
|---|
| 1. A minimum of 120 s.h. are required for graduation.   |
| 2. Students must discuss with their advisors which electives would best serve their future career goals before choosing them. |
| 3. Students completing MAT 224 and MAT 260 are eligible for a Math Minor.   |

Program Code: ULASPHYAS  
Effective Date of Program: Spring 2012  
Version Number: 2122  
Reviewed: 10/2011

STUDENT:



STUDENT ID NUMBER:

## COLLEGE OF LIBERAL ARTS & SCIENCES • BS • PHYSICS/ASTRONOMY

Program Code **ULASPHYAS**Effective Date: **08/29/2011**

### GENERAL EDUCATION

**I. UNIVERSITY CORE (12 credits)**

|  | RC | CR | GR |
|--|----|----|----|
| <b>A. Oral Communication:</b> COM 10 or above      |    |    |    |
| COURSE:  | 3  |    |    |
| <b>B. Written Communication:</b> ENG 23, 24, or 25 |    |    |    |
| COURSE:  | 3  |    |    |
| <b>C. Mathematics:</b> MAT 17 or above             |    |    |    |
| COURSE:  | 3  |    |    |
| <b>D. Wellness:</b> Any 3-credit HEA course        |    |    |    |
| COURSE:  | 3  |    |    |

**II. UNIVERSITY DISTRIBUTION (15 credits)**

|   | RC | CR | GR | CAC |
|---|----|----|----|-----|
| <b>A. Natural Sciences:</b> Any lab or non-lab course with prefix AST, BIO, CHM, ENV, GEL, MAR, NSE, or PHY; or certain GEG courses (see note at right) |    |    |    |     |
| COURSE:   | 3  |    |    |     |
| <b>B. Social Sciences:</b> Any course with prefix ANT, CRJ, ECO, HIS, INT, MCS, PSY, POL, SOC, SSE, or SWK; or certain GEG courses (see note at right)  |    |    |    |     |
| COURSE:   | 3  |    |    |     |
| <b>C. Humanities:</b> Any course with prefix ENG, HUM, PAG, PHI, WRi, WGS, or Modern Language   |    |    |    |     |
| COURSE:   | 3  |    |    |     |
| <b>D. Arts:</b> Any course with prefix ARC, ARH, ART, CDE, CDH, CFT, DAN, FAR, FAS, MUP, MUS, or THE  |    |    |    |     |
| COURSE:   | 3  |    |    |     |
| <b>E. Free Elective:</b> Any course carrying university credit  |    |    |    |     |
| COURSE:   | 3  |    |    |     |

**III. COMPETENCIES ACROSS THE CURRICULUM**

|  | RC | CR | GR | CAC |
|--|----|----|----|-----|
| <b>A. Writing Intensive (WI)</b> (9 credits)     |    |    |    |     |
| COURSE:  | 3  |    |    | WI  |
| COURSE:  | 3  |    |    | WI  |
| COURSE:  | 3  |    |    | WI  |
| <b>B. Quantitative Literacy (QL)</b> (3 credits) |    |    |    |     |
| <b>Computer-Intensive (CP)</b> (3 credits)       |    |    |    |     |
| COURSE:  | 3  |    |    |     |
| <b>C. Visual Literacy (VL)</b> (3 credits)       |    |    |    |     |
| <b>Communication-Intensive (CM)</b> (3 credits)  |    |    |    |     |
| COURSE:  | 3  |    |    |     |
| <b>D. Cultural Diversity (CD)</b> (3 credits)    |    |    |    |     |
| COURSE:  | 3  |    |    | CD  |
| <b>E. Critical Thinking (CT)</b> (3 credits)     |    |    |    |     |
| COURSE:  | 3  |    |    | CT  |

A Competency Across the Curriculum (CAC) course is not a separate course, but rather an overlay that is "double counted" as fulfilling both the CAC requirement and another requirement in either General Education (except for the University Core), the major, or the minor.

**RC** = Minimum required number of credits

**CR** = Credits earned (fill in number of credits)

**GR** = Grade earned (fill in letter grade)

**CAC** = Competency Across the Curriculum (fill in designation)

**NOTE:** GEG courses with a lab and 40, 322, and 323 may be used in II.A. and GEG courses 40, 204, 274, 304, 322, 323, 324, 347, 380, and 394 may NOT be used in II.B.

**IV. COLLEGE DISTRIBUTION (33 credits)**

|  | RC | CR | GR | CAC |
|--|----|----|----|-----|
| <b>A. Natural Science, Mathematics, and Computer Science<sup>#</sup> (6 credits):</b> Choose one course in each subcategory. |    |    |    |     |
| <b>1. Natural Science with Lab:</b> AST, BIO, CHM, ENV, GEL, PHY, or MAR; or GEG (see note at right)                         |    |    |    |     |
| COURSE:  | 3  |    |    |     |
| <b>2. Elective:</b> MAT, CSC, AST, BIO, CHM, ENV, GEL, PHY, or MAR; or GEG (see note at right)                               |    |    |    |     |
| COURSE:  | 3  |    |    |     |
| <b>B. Social Science (9 credits):</b> Choose one course in each subcategory.   |    |    |    |     |
| <b>1. Elective:</b> HIS, ANT, GEG (see note at right), or POL  |    |    |    |     |
| COURSE:  | 3  |    |    |     |
| <b>2. Elective:</b> PSY, SOC, CRJ, or SWK  |    |    |    |     |
| COURSE:  | 3  |    |    |     |
| <b>3. Elective:</b> ANT, HIS, ECO, GEG (see note at right), PSY, POL, SOC, CRJ, or SWK                                       |    |    |    |     |
| COURSE:  | 3  |    |    |     |

|   | RC | CR | GR | CAC |
|---|----|----|----|-----|
| <b>C. Humanities (9 credits):</b> Choose one course in each subcategory.                          |    |    |    |     |
| <b>1. Elective:</b> PAG*, ENG, WRi, or HUM  |    |    |    |     |
| COURSE:   | 3  |    |    |     |
| <b>2. Elective:</b> Modern Language (103 or above) or PHI   |    |    |    |     |
| COURSE:   | 3  |    |    |     |
| <b>3. Elective:</b> PAG*, ENG, WRi, HUM, Modern Language (103 or above), or PHI                   |    |    |    |     |
| COURSE:   | 3  |    |    |     |
| <b>D. Free Electives (9 credits):</b> Choose any university courses that count toward graduation. |    |    |    |     |
| COURSE:   | 3  |    |    |     |
| COURSE:   | 3  |    |    |     |
| COURSE:   | 3  |    |    |     |

**NOTE:** GEG courses with a lab and 40, 322, and 323 may be used in IV.A. and GEG courses 40, 204, 274, 304, 322, 323, 324, 347, 380, and 394 may NOT be used in IV.B.

<sup>#</sup> Students in the College of Liberal Arts and Sciences are required to take at least one course in Biological Science (BIO) and at least one course in Physical Science (AST, CHM, ENV, GEL, PHY, MAR, GEG with lab, or GEG 40, GEG 322, or GEG 323), and at least one of which must be a lab (each course may be counted in either sections II.A. or IV.A).

\* Excludes PAG 011 and PAG 012

## B.S. in Physics<sup>1</sup>

(This document should *not* be considered as a substitute for the official program check sheet. Please refer to the program check sheet for all the footnotes, other guidelines and requirements.)

### First Year

| Fall    |                     |           | Spring  |                      |           |
|---------|---------------------|-----------|---------|----------------------|-----------|
| Number  | Title               | Credits   | Number  | Title                | Credits   |
| PHY 100 | Physics I           | 4         | PHY 102 | Physics II           | 4         |
| MAT 181 | Calculus I          | 4         | MAT 182 | Calculus II          | 4         |
| CHM 100 | General Chemistry I | 4         | CHM 102 | General Chemistry II | 4         |
|         | <i>Gen. Ed.</i>     | 3         |         | <i>Gen. Ed.</i>      | 3         |
|         |                     | <b>15</b> |         |                      | <b>15</b> |

### Second Year

| Fall    |                        |           | Spring  |                        |           |
|---------|------------------------|-----------|---------|------------------------|-----------|
| Number  | Title                  | Credits   | Number  | Title                  | Credits   |
| PHY 212 | Modern Physics I       | 3         | PHY 214 | Modern Physics II      | 3         |
| PHY 220 | Electronics            | 3         | PHY 230 | Optics                 | 3         |
| PHY 245 | Mathematical Physics I | 3         | PHY 312 | Classical Mechanics I  | 4         |
| MAT 283 | Calculus III           | 4         | MAT 340 | Differential Equations | 3         |
|         | <i>Gen. Ed.</i>        | 3         |         | <i>Gen. Ed.</i>        | 3         |
|         |                        | <b>16</b> |         |                        | <b>16</b> |

### Third Year

| Fall    |                           |           | Spring  |                         |           |
|---------|---------------------------|-----------|---------|-------------------------|-----------|
| Number  | Title                     | Credits   | Number  | Title                   | Credits   |
| PHY 316 | Electricity & Magnetism I | 3         | PHY 315 | Advanced Lab            | 3         |
| PHY 340 | Computational Physics     | 3         | PHY 327 | Thermo. & Stat. Mech.   | 3         |
| PHY 345 | Mathematical Physics II   | 3         | PHY 360 | Quantum Mechanics I     | 3         |
|         | <i>Physics Elective</i>   | 3         |         | <i>Physics Elective</i> | 3         |
|         | <i>Gen. Ed.</i>           | 3         |         | <i>Gen. Ed.</i>         | 3         |
|         |                           | <b>15</b> |         |                         | <b>15</b> |

### Fourth Year

| Fall    |                       |           | Spring  |                            |           |
|---------|-----------------------|-----------|---------|----------------------------|-----------|
| Number  | Title                 | Credits   | Number  | Title                      | Credits   |
| PHY 380 | Senior Seminar        | 3         | PHY 350 | Instrumentation in Physics | 3         |
| BIO 104 | Principles of Biology | 4         |         | <i>Gen. Ed.</i>            | 3         |
|         | <i>Gen. Ed.</i>       | 3         |         | <i>Gen. Ed.</i>            | 3         |
|         | <i>Gen. Ed.</i>       | 3         |         | <i>Gen. Ed.</i>            | 3         |
|         |                       | <b>13</b> |         |                            | <b>3</b>  |
|         |                       |           |         |                            | <b>15</b> |

### Gen. Ed.

|   |  |
|---|--|
| I.A. Oral Communication (SPE 010 or above)                                    |  |
| I.B. Written Communication (ENG 023,024, or 025)                              |  |
| I.D. Wellness   |  |
| II.B. Social Sciences (ANT, CRJ, ECO, GEG, HIS, INT, MCS, PSY, POL, SOC, SWK) |  |
| II.C. Humanities (ENG, HUM, PAG, PHI, WRI, WST, Modern Language)              |  |
| II.D. Arts (ARC, ARH, ART, CDE, CDH, CFT, DAN, FAR, FAS, MUP, MUS, THE)       |  |
| IV.B.1. Social Sciences (HIS, ANT, GEG, POL)                                  |  |
| IV.B.2. Social Sciences (PSY, SOC, CRJ, SWK)                                  |  |
| IV.B.3. Social Sciences (ANT, HIS, ECO, GEG, PSY, POL, SOC, CRJ, SWK)         |  |
| IV.C.1. Humanities (PAG*, ENG, WRI, HUM)                                      |  |
| IV.C.2. MLS*, GER*, SPA*, FRE*, CHI*, ARA*, PHI)                              |  |
| IV.C.3. PAG*, MLS*, GER*, SPA*, FRE*, CHI*, ARA*, ENG, WRI, HUM, PHI)         |  |

At least one of Gen. Ed. Courses must have the *Cultural Diversity* (CD) competence.

<sup>1</sup>**Courses in the Physics major are front-loaded in this plan.** It is designed with two groups of students in mind:

- Those who wish to go to graduate school in physics and want to complete most of the physics curriculum before taking the GRE-Physics Test in the Fall semester of their senior year
- Those who switch to Physics and wish to complete the major's courses in less than four years (assuming they have many gen. ed. and concomitant courses at the time of switch)

Others who wish to complete the required courses at a slower pace by distributing them over all four years are urged to discuss a suitable course plan with their advisor.

## B.S. in Physics / Engineering Physics<sup>1</sup>

(This document should *not* be considered as a substitute for the official program check sheet. Please refer to the program check sheet for all the footnotes, other guidelines and requirements.)

### First Year

| Fall    |                     |           | Spring  |                       |           |
|---------|---------------------|-----------|---------|-----------------------|-----------|
| Number  | Title               | Credits   | Number  | Title                 | Credits   |
| PHY 100 | Physics I           | 4         | PHY 102 | Physics II            | 4         |
| MAT 181 | Calculus I          | 4         | EGR 121 | Drawing and Lettering | 3         |
| CHM 100 | General Chemistry I | 4         | MAT 182 | Calculus II           | 4         |
|         | <i>Gen. Ed.</i>     | 3         | CHM 102 | General Chemistry II  | 4         |
|         |                     | <b>15</b> |         |                       | <b>15</b> |

### Second Year

| Fall    |                        |           | Spring  |                        |           |
|---------|------------------------|-----------|---------|------------------------|-----------|
| Number  | Title                  | Credits   | Number  | Title                  | Credits   |
| PHY 212 | Modern Physics I       | 3         | PHY 214 | Modern Physics II      | 3         |
| PHY 220 | Electronics            | 3         | PHY 230 | Optics                 | 3         |
| PHY 245 | Mathematical Physics I | 3         | PHY 312 | Classical Mechanics I  | 4         |
| EGR 130 | Engineering Mechanics  | 3         | EGR 230 | Strength of Materials  | 3         |
| MAT 283 | Calculus III           | 4         | MAT 340 | Differential Equations | 3         |
|         |                        | <b>16</b> |         |                        | <b>16</b> |

### Third Year

| Fall    |                           |           | Spring  |                       |           |
|---------|---------------------------|-----------|---------|-----------------------|-----------|
| Number  | Title                     | Credits   | Number  | Title                 | Credits   |
| PHY 316 | Electricity & Magnetism I | 3         | PHY 315 | Advanced Lab          | 3         |
| PHY 340 | Computational Physics     | 3         | PHY 327 | Thermo. & Stat. Mech. | 3         |
|         | <i>Gen. Ed.</i>           | 3         | EGR 330 | Fluid Mechanics       | 3         |
|         | <i>Gen. Ed.</i>           | 3         |         | <i>Gen. Ed.</i>       | 3         |
|         | <i>Gen. Ed.</i>           | 3         |         | <i>Gen. Ed.</i>       | 3         |
|         |                           | <b>15</b> |         |                       | <b>15</b> |

### Fourth Year

| Fall    |                       |           | Spring  |                            |           |
|---------|-----------------------|-----------|---------|----------------------------|-----------|
| Number  | Title                 | Credits   | Number  | Title                      | Credits   |
| PHY 380 | Senior Seminar        | 3         | PHY 350 | Instrumentation in Physics | 3         |
| BIO 104 | Principles of Biology | 4         |         | <i>Gen. Ed.</i>            | 3         |
|         | <i>Gen. Ed.</i>       | 3         |         | <i>Gen. Ed.</i>            | 3         |
|         | <i>Gen. Ed.</i>       | 3         |         | <i>Gen. Ed.</i>            | 3         |
|         |                       | <b>13</b> |         | <i>Gen. Ed.</i>            | 3         |
|         |                       |           |         |                            | <b>15</b> |

#### *Gen. Ed.*

|   |  |
|---|--|
| I.A. Oral Communication (SPE 010 or above)                                    |  |
| I.B. Written Communication (ENG 023,024, or 025)                              |  |
| I.D. Wellness   |  |
| II.B. Social Sciences (ANT, CRJ, ECO, GEG, HIS, INT, MCS, PSY, POL, SOC, SWK) |  |
| II.C. Humanities (ENG, HUM, PAG, PHI, WRI, WST, Modern Language)              |  |
| II.D. Arts (ARC, ARH, ART, CDE, CDH, CFT, DAN, FAR, FAS, MUP, MUS, THE)       |  |
| IV.B.1. Social Sciences (HIS, ANT, GEG, POL)                                  |  |
| IV.B.2. Social Sciences (PSY, SOC, CRJ, SWK)                                  |  |
| IV.B.3. Social Sciences (ANT, HIS, ECO, GEG, PSY, POL, SOC, CRJ, SWK)         |  |
| IV.C.1. Humanities (PAG*, ENG, WRI, HUM)                                      |  |
| IV.C.2. MLS*, GER*, SPA*, FRE*, CHI*, ARA*, PHI)                              |  |
| IV.C.3. PAG*, MLS*, GER*, SPA*, FRE*, CHI*, ARA*, ENG, WRI, HUM, PHI)         |  |

At least one of Gen. Ed. Courses must have the *Cultural Diversity* (CD) competence.

<sup>1</sup>**Courses in the Physics major are front-loaded in this plan.** It is designed with the following group of students in mind:

- Those who switch to Physics and wish to complete the major's courses in less than four years (assuming they have many gen. ed. and concomitant courses at the time of switch)

Others who wish to complete the required courses at a slower pace by distributing them over all four years are urged to discuss a suitable course plan with their advisor.

## B.S. in Physics / Astronomy<sup>1</sup>

(This document should *not* be considered as a substitute for the official program check sheet. Please refer to the program check sheet for all the footnotes, other guidelines and requirements.)

### First Year

| Fall    |                     |           | Spring  |                      |           |
|---------|---------------------|-----------|---------|----------------------|-----------|
| Number  | Title               | Credits   | Number  | Title                | Credits   |
| PHY 100 | Physics I           | 4         | PHY 102 | Physics II           | 4         |
| MAT 181 | Calculus I          | 4         | MAT 182 | Calculus II          | 4         |
| CHM 100 | General Chemistry I | 4         | CHM 102 | General Chemistry II | 4         |
|         | <i>Gen. Ed.</i>     | 3         |         | <i>Gen. Ed.</i>      | 3         |
|         |                     | <b>15</b> |         |                      | <b>15</b> |

### Second Year

| Fall    |                        |           | Spring  |                              |           |
|---------|------------------------|-----------|---------|------------------------------|-----------|
| Number  | Title                  | Credits   | Number  | Title                        | Credits   |
| PHY 212 | Modern Physics I       | 3         | PHY 214 | Modern Physics II            | 3         |
| PHY 220 | Electronics            | 3         | PHY 230 | Optics                       | 3         |
| PHY 245 | Mathematical Physics I | 3         | PHY 312 | Classical Mechanics I        | 4         |
| AST 140 | Planetary Science      | 3         | AST 142 | Stellar & Galactic Astronomy | 3         |
| MAT 283 | Calculus III           | 4         | MAT 340 | Differential Equations       | 3         |
|         |                        | <b>16</b> |         |                              | <b>16</b> |

### Third Year

| Fall    |                           |           | Spring  |                           |           |
|---------|---------------------------|-----------|---------|---------------------------|-----------|
| Number  | Title                     | Credits   | Number  | Title                     | Credits   |
| PHY 316 | Electricity & Magnetism I | 3         | PHY 315 | Advanced Lab              | 3         |
| PHY 340 | Computational Physics     | 3         | PHY 327 | Thermo. & Stat. Mech.     | 3         |
| AST 342 | Astrophysics              | 3         | PHY 360 | Quantum Mechanics I       | 3         |
|         | <i>Gen. Ed.</i>           | 3         |         | <i>Astronomy Elective</i> | 3         |
|         | <i>Gen. Ed.</i>           | 3         |         | <i>Gen. Ed.</i>           | 3         |
|         |                           | <b>15</b> |         |                           | <b>15</b> |

### Fourth Year

| Fall    |                       |           | Spring |                 |           |
|---------|-----------------------|-----------|--------|-----------------|-----------|
| Number  | Title                 | Credits   | Number | Title           | Credits   |
| PHY 380 | Senior Seminar        | 3         |        | <i>Gen. Ed.</i> | 3         |
| BIO 104 | Principles of Biology | 4         |        | <i>Gen. Ed.</i> | 3         |
|         | <i>Gen. Ed.</i>       | 3         |        | <i>Gen. Ed.</i> | 3         |
|         | <i>Gen. Ed.</i>       | 3         |        | <i>Gen. Ed.</i> | 3         |
|         |                       | <b>13</b> |        | <i>Gen. Ed.</i> | 3         |
|         |                       |           |        |                 | <b>15</b> |

#### *Gen. Ed.*

|   |  |
|---|--|
| I.A. Oral Communication (SPE 010 or above)                                    |  |
| I.B. Written Communication (ENG 023,024, or 025)                              |  |
| I.D. Wellness   |  |
| II.B. Social Sciences (ANT, CRJ, ECO, GEG, HIS, INT, MCS, PSY, POL, SOC, SWK) |  |
| II.C. Humanities (ENG, HUM, PAG, PHI, WRI, WST, Modern Language)              |  |
| II.D. Arts (ARC, ARH, ART, CDE, CDH, CFT, DAN, FAR, FAS, MUP, MUS, THE)       |  |
| IV.B.1. Social Sciences (HIS, ANT, GEG, POL)                                  |  |
| IV.B.2. Social Sciences (PSY, SOC, CRJ, SWK)                                  |  |
| IV.B.3. Social Sciences (ANT, HIS, ECO, GEG, PSY, POL, SOC, CRJ, SWK)         |  |
| IV.C.1. Humanities (PAG*, ENG, WRI, HUM)                                      |  |
| IV.C.2. MLS*, GER*, SPA*, FRE*, CHI*, ARA*, PHI)                              |  |
| IV.C.3. PAG*, MLS*, GER*, SPA*, FRE*, CHI*, ARA*, ENG, WRI, HUM, PHI)         |  |

At least one of Gen. Ed. Courses must have the *Cultural Diversity* (CD) competence.

<sup>1</sup>**Courses in the Physics major are front-loaded in this plan.** It is designed with two groups of students in mind:

- Those who wish to go to graduate school in physics and want to complete most of the physics curriculum before taking the GRE-Physics Test in the Fall semester of their senior year
- Those who switch to Physics and wish to complete the major's courses in less than four years (assuming they have many gen. ed. and concomitant courses at the time of switch)

Others who wish to complete the required courses at a slower pace by distributing them over all four years are urged to discuss a suitable course plan with their advisor.

## B.S. in Physics<sup>2</sup>

(This document should *not* be considered as a substitute for the official program check sheet. Please refer to the program check sheet for all the footnotes, other guidelines and requirements.)

### First Year

| Fall    |                     |           | Spring  |                      |           |
|---------|---------------------|-----------|---------|----------------------|-----------|
| Number  | Title               | Credits   | Number  | Title                | Credits   |
| PHY 100 | Physics I           | 4         | PHY 102 | Physics II           | 4         |
| MAT 181 | Calculus I          | 4         | MAT 182 | Calculus II          | 4         |
| CHM 100 | General Chemistry I | 4         | CHM 102 | General Chemistry II | 4         |
|         | <i>Gen. Ed.</i>     | 3         |         | <i>Gen. Ed.</i>      | 3         |
|         |                     | <b>15</b> |         |                      | <b>15</b> |

### Second Year

| Fall    |                        |           | Spring  |                        |           |
|---------|------------------------|-----------|---------|------------------------|-----------|
| Number  | Title                  | Credits   | Number  | Title                  | Credits   |
| PHY 212 | Modern Physics I       | 3         | PHY 214 | Modern Physics II      | 3         |
| PHY 245 | Mathematical Physics I | 3         | PHY 230 | Optics                 | 3         |
| MAT 283 | Calculus III           | 4         | MAT 340 | Differential Equations | 3         |
|         | <i>Gen. Ed.</i>        | 3         |         | <i>Gen. Ed.</i>        | 3         |
|         | <i>Gen. Ed.</i>        | 3         |         | <i>Gen. Ed.</i>        | 3         |
|         |                        | <b>16</b> |         |                        | <b>15</b> |

### Third Year

| Fall    |                           |           | Spring  |                            |           |
|---------|---------------------------|-----------|---------|----------------------------|-----------|
| Number  | Title                     | Credits   | Number  | Title                      | Credits   |
| PHY 220 | Electronics               | 3         | PHY 312 | Classical Mechanics I      | 4         |
| PHY 316 | Electricity & Magnetism I | 3         | PHY 350 | Instrumentation in Physics | 3         |
|         | <i>Physics Elective</i>   | 3         |         | <i>Physics Elective</i>    | 3         |
|         | <i>Gen. Ed.</i>           | 3         |         | <i>Gen. Ed.</i>            | 3         |
|         | <i>Gen. Ed.</i>           | 3         |         | <i>Gen. Ed.</i>            | 3         |
|         |                           | <b>15</b> |         |                            | <b>16</b> |

### Fourth Year

| Fall    |                         |           | Spring  |                       |           |
|---------|-------------------------|-----------|---------|-----------------------|-----------|
| Number  | Title                   | Credits   | Number  | Title                 | Credits   |
| PHY 340 | Computational Physics   | 3         | PHY 315 | Advanced Lab          | 3         |
| PHY 345 | Mathematical Physics II | 3         | PHY 327 | Thermo. & Stat. Mech. | 3         |
| PHY 380 | Senior Seminar          | 3         | PHY 360 | Quantum Mechanics I   | 3         |
| BIO 104 | Principles of Biology   | 4         |         | <i>Gen. Ed.</i>       | 3         |
|         |                         | <b>13</b> |         | <i>Gen. Ed.</i>       | 3         |
|         |                         |           |         |                       | <b>15</b> |

#### *Gen. Ed.*

|   |  |
|---|--|
| I.A. Oral Communication (SPE 010 or above)                                    |  |
| I.B. Written Communication (ENG 023,024, or 025)                              |  |
| I.D. Wellness   |  |
| II.B. Social Sciences (ANT, CRJ, ECO, GEG, HIS, INT, MCS, PSY, POL, SOC, SWK) |  |
| II.C. Humanities (ENG, HUM, PAG, PHI, WRI, WST, Modern Language)              |  |
| II.D. Arts (ARC, ARH, ART, CDE, CDH, CFT, DAN, FAR, FAS, MUP, MUS, THE)       |  |
| IV.B.1. Social Sciences (HIS, ANT, GEG, POL)                                  |  |
| IV.B.2. Social Sciences (PSY, SOC, CRJ, SWK)                                  |  |
| IV.B.3. Social Sciences (ANT, HIS, ECO, GEG, PSY, POL, SOC, CRJ, SWK)         |  |
| IV.C.1. Humanities (PAG*, ENG, WRI, HUM)                                      |  |
| IV.C.2. MLS*, GER*, SPA*, FRE*, CHI*, ARA*, PHI)                              |  |
| IV.C.3. PAG*, MLS*, GER*, SPA*, FRE*, CHI*, ARA*, ENG, WRI, HUM, PHI)         |  |

At least one of Gen. Ed. Courses must have the *Cultural Diversity* (CD) competence.

<sup>2</sup>Courses in the Physics major are distributed more uniformly over the four years in this plan. However, those who wish to take the GRE-Physics test in the Fall semester of their fourth year are encouraged to follow the more aggressive plan.

## B.S. in Physics / Engineering Physics<sup>2</sup>

(This document should *not* be considered as a substitute for the official program check sheet. Please refer to the program check sheet for all the footnotes, other guidelines and requirements.)

### First Year

| Fall    |                     |           | Spring  |                       |           |
|---------|---------------------|-----------|---------|-----------------------|-----------|
| Number  | Title               | Credits   | Number  | Title                 | Credits   |
| PHY 100 | Physics I           | 4         | PHY 102 | Physics II            | 4         |
| MAT 181 | Calculus I          | 4         | EGR 121 | Drawing and Lettering | 3         |
| CHM 100 | General Chemistry I | 4         | MAT 182 | Calculus II           | 4         |
|         | <i>Gen. Ed.</i>     | 3         | CHM 102 | General Chemistry II  | 4         |
|         |                     | <b>15</b> |         |                       | <b>15</b> |

### Second Year

| Fall    |                        |           | Spring  |                        |           |
|---------|------------------------|-----------|---------|------------------------|-----------|
| Number  | Title                  | Credits   | Number  | Title                  | Credits   |
| PHY 245 | Mathematical Physics I | 3         | PHY 230 | Optics                 | 3         |
| EGR 130 | Engineering Mechanics  | 3         | EGR 230 | Strength of Materials  | 3         |
| MAT 283 | Calculus III           | 4         | MAT 340 | Differential Equations | 3         |
|         | <i>Gen. Ed.</i>        | 3         |         | <i>Gen. Ed.</i>        | 3         |
|         | <i>Gen. Ed.</i>        | 3         |         | <i>Gen. Ed.</i>        | 3         |
|         |                        | <b>16</b> |         |                        | <b>15</b> |

### Third Year

| Fall    |                       |           | Spring  |                            |           |
|---------|-----------------------|-----------|---------|----------------------------|-----------|
| Number  | Title                 | Credits   | Number  | Title                      | Credits   |
| PHY 212 | Modern Physics I      | 3         | PHY 214 | Modern Physics II          | 3         |
| PHY 220 | Electronics           | 3         | PHY 312 | Classical Mechanics I      | 4         |
| PHY 340 | Computational Physics | 3         | PHY 350 | Instrumentation in Physics | 3         |
|         | <i>Gen. Ed.</i>       | 3         |         | <i>Gen. Ed.</i>            | 3         |
|         | <i>Gen. Ed.</i>       | 3         |         | <i>Gen. Ed.</i>            | 3         |
|         |                       | <b>15</b> |         |                            | <b>16</b> |

### Fourth Year

| Fall    |                           |           | Spring  |                       |           |
|---------|---------------------------|-----------|---------|-----------------------|-----------|
| Number  | Title                     | Credits   | Number  | Title                 | Credits   |
| PHY 316 | Electricity & Magnetism I | 3         | PHY 315 | Advanced Lab          | 3         |
| PHY 380 | Senior Seminar            | 3         | PHY 327 | Thermo. & Stat. Mech. | 3         |
| BIO 104 | Principles of Biology     | 4         | EGR 330 | Fluid Mechanics       | 3         |
|         | <i>Gen. Ed.</i>           | 3         |         | <i>Gen. Ed.</i>       | 3         |
|         |                           | <b>13</b> |         | <i>Gen. Ed.</i>       | 3         |
|         |                           |           |         |                       | <b>15</b> |

#### Gen. Ed.

|   |  |
|---|--|
| I.A. Oral Communication (SPE 010 or above)                                    |  |
| I.B. Written Communication (ENG 023,024, or 025)                              |  |
| I.D. Wellness   |  |
| II.B. Social Sciences (ANT, CRJ, ECO, GEG, HIS, INT, MCS, PSY, POL, SOC, SWK) |  |
| II.C. Humanities (ENG, HUM, PAG, PHI, WRI, WST, Modern Language)              |  |
| II.D. Arts (ARC, ARH, ART, CDE, CDH, CFT, DAN, FAR, FAS, MUP, MUS, THE)       |  |
| IV.B.1. Social Sciences (HIS, ANT, GEG, POL)                                  |  |
| IV.B.2. Social Sciences (PSY, SOC, CRJ, SWK)                                  |  |
| IV.B.3. Social Sciences (ANT, HIS, ECO, GEG, PSY, POL, SOC, CRJ, SWK)         |  |
| IV.C.1. Humanities (PAG*, ENG, WRI, HUM)                                      |  |
| IV.C.2. MLS*, GER*, SPA*, FRE*, CHI*, ARA*, PHI)                              |  |
| IV.C.3. PAG*, MLS*, GER*, SPA*, FRE*, CHI*, ARA*, ENG, WRI, HUM, PHI)         |  |

At least one of Gen. Ed. Courses must have the *Cultural Diversity* (CD) competence.

<sup>2</sup>Courses in the Physics major are distributed more uniformly over the four years in this plan. However, those who wish to take the GRE-Physics test in the Fall semester of their fourth year are encouraged to follow the more aggressive plan.

## B.S. in Physics / Astronomy<sup>2</sup>

(This document should *not* be considered as a substitute for the official program check sheet. Please refer to the program check sheet for all the footnotes, other guidelines and requirements.)

### First Year

| Fall    |                     |           | Spring  |                      |           |
|---------|---------------------|-----------|---------|----------------------|-----------|
| Number  | Title               | Credits   | Number  | Title                | Credits   |
| PHY 100 | Physics I           | 4         | PHY 102 | Physics II           | 4         |
| MAT 181 | Calculus I          | 4         | MAT 182 | Calculus II          | 4         |
| CHM 100 | General Chemistry I | 4         | CHM 102 | General Chemistry II | 4         |
|         | <i>Gen. Ed.</i>     | 3         |         | <i>Gen. Ed.</i>      | 3         |
|         |                     | <b>15</b> |         |                      | <b>15</b> |

### Second Year

| Fall    |                        |           | Spring  |                              |           |
|---------|------------------------|-----------|---------|------------------------------|-----------|
| Number  | Title                  | Credits   | Number  | Title                        | Credits   |
| PHY 212 | Modern Physics I       | 3         | PHY 214 | Modern Physics II            | 3         |
| PHY 245 | Mathematical Physics I | 3         | PHY 312 | Classical Mechanics I        | 4         |
| AST 140 | Planetary Science      | 3         | AST 142 | Stellar & Galactic Astronomy | 3         |
| MAT 283 | Calculus III           | 4         | MAT 340 | Differential Equations       | 3         |
|         | <i>Gen. Ed.</i>        | 3         |         | <i>Gen. Ed.</i>              | 3         |
|         |                        | <b>16</b> |         |                              | <b>16</b> |

### Third Year

| Fall    |                           |           | Spring  |                           |           |
|---------|---------------------------|-----------|---------|---------------------------|-----------|
| Number  | Title                     | Credits   | Number  | Title                     | Credits   |
| PHY 220 | Electronics               | 3         | PHY 230 | Optics                    | 3         |
| PHY 316 | Electricity & Magnetism I | 3         | PHY 327 | Thermo. & Stat. Mech.     | 3         |
| AST 342 | Astrophysics              | 3         |         | <i>Astronomy Elective</i> | 3         |
|         | <i>Gen. Ed.</i>           | 3         |         | <i>Gen. Ed.</i>           | 3         |
|         | <i>Gen. Ed.</i>           | 3         |         | <i>Gen. Ed.</i>           | 3         |
|         |                           | <b>15</b> |         |                           | <b>15</b> |

### Fourth Year

| Fall    |                       |           | Spring  |                     |           |
|---------|-----------------------|-----------|---------|---------------------|-----------|
| Number  | Title                 | Credits   | Number  | Title               | Credits   |
| PHY 340 | Computational Physics | 3         | PHY 315 | Advanced Lab        | 3         |
| PHY 380 | Senior Seminar        | 3         | PHY 360 | Quantum Mechanics I | 3         |
| BIO 104 | Principles of Biology | 4         |         | <i>Gen. Ed.</i>     | 3         |
|         | <i>Gen. Ed.</i>       | 3         |         | <i>Gen. Ed.</i>     | 3         |
|         |                       | <b>13</b> |         | <i>Gen. Ed.</i>     | 3         |
|         |                       |           |         |                     | <b>15</b> |

### Gen. Ed.

|   |  |
|---|--|
| I.A. Oral Communication (SPE 010 or above)                                    |  |
| I.B. Written Communication (ENG 023,024, or 025)                              |  |
| I.D. Wellness   |  |
| II.B. Social Sciences (ANT, CRJ, ECO, GEG, HIS, INT, MCS, PSY, POL, SOC, SWK) |  |
| II.C. Humanities (ENG, HUM, PAG, PHI, WRI, WST, Modern Language)              |  |
| II.D. Arts (ARC, ARH, ART, CDE, CDH, CFT, DAN, FAR, FAS, MUP, MUS, THE)       |  |
| IV.B.1. Social Sciences (HIS, ANT, GEG, POL)                                  |  |
| IV.B.2. Social Sciences (PSY, SOC, CRJ, SWK)                                  |  |
| IV.B.3. Social Sciences (ANT, HIS, ECO, GEG, PSY, POL, SOC, CRJ, SWK)         |  |
| IV.C.1. Humanities (PAG*, ENG, WRI, HUM)                                      |  |
| IV.C.2. MLS*, GER*, SPA*, FRE*, CHI*, ARA*, PHI)                              |  |
| IV.C.3. PAG*, MLS*, GER*, SPA*, FRE*, CHI*, ARA*, ENG, WRI, HUM, PHI)         |  |

At least one of Gen. Ed. Courses must have the *Cultural Diversity* (CD) competence.

<sup>2</sup>Courses in the Physics major are distributed more uniformly over the four years in this plan. However, those who wish to take the GRE-Physics test in the Fall semester of their fourth year are encouraged to follow the more aggressive plan.



## **B.S. in Physics and B.S. in Mathematics Double-Major**

Since this is the most popular double major combination among physics students, I felt I should add this note. One could get a Physics/Math double major by taking a minimum of *150 credits* (if courses are chosen carefully).

- Physics/Math double-majors may choose not to take PHY 380 (Physics Senior Seminar). However, advisors must fill out a Substitution Form requesting that MAT 380 be substituted for PHY 380 requirement in the Physics Program Check Sheet. Students are still required to take Physics Comprehensive Exam.
- If such a student, who is in the new Gen Ed, chooses not to take PHY 380, he/she must find another way to fulfill the WI and CM Competencies attached to PHY 380.
- Those who are in the Pure Math track must count MAT 340 under either the Required courses or the Electives. Those who are in the Applied Math track must count MAT 340 under the Electives.
- Math requirement of PHI 140 (Symbolic Logic) should be counted under Gen Ed category II.C or IV.C.2 or IV.C.3.
- Math requirement of WRI 207 (Writing for the Workplace) should be counted under Gene Ed category II.C or IV.C.1 or IV.C.3.