## The University of Texas Rio Grande Valley Bachelor of Science (BS) Physics Concentration: Pure and Applied Physics

|            | і Н | Course #             | Course Title   | Min.<br>Grade | _       | Prerequisite  | Additional Notes  |
|------------|-----|----------------------|--|---------------|---------|---|---|
|            | 3   | Choose 1             | Communication (Core)   | C             | 010     | For all 010 courses: Satisfactory scores on English portion of ACT test<br>and TSI examination or ENGL 0301. For ENGL 1302, a grade of "C" or<br>better in ENGL 1301. | See General Education Core for more details.<br>Options: ENGL 1301                          |
|            | 4   | MATH 2413            | Calculus I (Core)  | с             | 020     | MATH 2412 with a grade of 'C' or better; or passing the Precalculus<br>Exemption Test administered by the Department of Mathematics.                                  |   |
| FALL       | 3   | Choose 1             | American History (Core)  |               | 060     |   | See General Education Core for more details.<br>Options: HIST 1301 or HIST 2327             |
|            | 3   | PHYS 1311            | Learning to be a Physicist   |               |         |   | Physics core requirement.   |
| FIRST YEAR |     | UNIV                 | 1301 Learning Framework<br>1101 Academic and Career Success<br>1001 Living and Working by Design |               |         |   | As required, based on credit hours earned, TSI status, High school rank, major declaration. |
|            | 13  | Semester Total Hours |  |               |         |   |   |
|            | 3   | Choose 1             | Communication (Core)   |               | 010     | For all 010 courses: Satisfactory scores on English portion of ACT test<br>and TSI examination or ENGL 0301. For ENGL 1302, a grade of "C" or<br>better in ENGL 1301. | See General Education Core for more details.<br>Options: ENGL 1302 or ENGL 1305             |
|            | 4   | MATH 2414            | Calculus II  | С             |         | MATH 2413 with a grade of 'C' or better.  |   |
| SPRING     | 4   | PHYS 2425            | Physics for Scientists and Engineers I (Core)  |               | 030/090 | MATH 2413 and concurrent enrollment in MATH 2414.   |   |
|            | 3   | Choose 1             | American History (Core)  |               | 060     |   | See General Education Core for more details.<br>Options: HIST 1302 or HIST 2328             |
|            | 3   | CSCI 1380            | Computer Science I   |               | 090     | Concurrent enrollment or credit for MATH 1314 or higher level mathematics course.   |   |
|            | 17  | Semester Total Hours |  |               |         |   |   |
|            | • н | Course #             | Course Title   | Min.<br>Grade | GEC     | Prerequisite  | Additional Notes  |
|            | 4   | MATH 2415            | Calculus III   |               |         | MATH 2414 with a grade of 'C' or better.  |   |
|            | 4   | PHYS 2426            | Physics for Scientists and Engineers II (Core)   |               | 030/090 | PHYS 2425.  |   |
| ₹ALL       | 3   | POLS 2305            | U.S. Federal Government & Politics (Core)  |               | 070     |   | See General Education Core for more details.  |
|            | 3   | Choose 1             | Science Elective   |               |         |   | See Degree Plan for course options.   |
| D YEAR     | 3   | PHYS 2327            | Physics for Scientists and Engineers III   |               |         | PHYS 2425. Students may take this course concurrently with PHYS 2426.   |   |
| ECON       | 17  | Semester Total Hours |  |               |         |   |   |
| S          | 3   | MATH 3341            | Differential Equations   |               |         | MATH 2414 with a grade of 'C' or better.  |   |
|            | 3   | Choose 1             | Science Elective   |               |         |   | See Degree Plan for course options.   |
| PRING      | 4   | PHYS 3402            | Modern Physics   |               |         | PHYS 2426 and PHYS 2327.  | Physics core requirement.   |
| SF         | 3   | POLS 2306            | Texas Government & Politics (Core)   |               | 070     |   | See General Education Core for more details.  |
|            | 3   | Choose 1             | Creative Arts (Core)   |               | 050     |   | See General Education Core for course options.  |
|            | 16  | Semester Total Hours |  |               |         |   |   |

CORE: The 2022-2023 list of core courses can be found in the 2022-2023 Undergraduate Catalog: www.utrgv.edu/smartcatalog > Bachelors Degree Regulations and Graduation Policies > 'Core Curriculum'

Symbols Key

Critical ('!'): sequence sensitive course.

Minimum Grade: A - Excellent; B - Good; C - Satisfactory; D - Below Average; CR - Credit; P - Passing; S - Satisfactory.

General Education Core (GEC) Sections: 010 - Communication; 020 - Mathematics; 030 - Life and Physical Sciences; 040 - Language, Philosophy & Culture; 050 - Creative Arts; 060 - American History; 070 - Government/Political Science; 080 - Social and Behavioral Sciences; 090 - Applied Communication and Literacies; 090 - Humanities; 090 -Leadership; 090 - Science Labs; 090 - Interdisciplinary ; 090 - Technologies; 090 - Language Diversity & Writing.

| 1                          | н  | Course #  | Course Title  | Min.<br>Grade | GEC | Prerequisite  | Additional Notes  |
|----------------------------|--|---|---|---------------|-----|---|---|
|                            | 3  | PHYS 3303   | Thermodynamics  |               |     | MATH 2415 and PHYS 2426 and PHYS 2327.  | Physics core requirement.   |
|                            |  | PHYS 4101   | Laboratory Research   |               |     | Consent of Instructor.  | Not needed if PHYS 4306 taken.  |
|                            | 4  | PHYS 3411   | Math Methods in Physics I   |               |     | MATH 3341   | Physics core requirement.   |
| FAL                        | 3  | Choose 1  | Science Elective  |               |     |   | See Degree Plan for course options.   |
|                            | 3  | Choose 1  | Social and Behavioral Sciences (Core)   |               | 080 |   | See General Education Core for course options.  |
| D YEAR                     | 3  | PHYS 3305   | Classical Mechanics   |               |     | PHYS 2426 and MATH 2415.  | Physics core requirement.   |
| THIR                       | 16   | Semester Total Hours  |   |               |     |   |   |
|                            | 4  | PHYS 3412   | Math Methods in Physics II  |               |     | PHYS 3411   | Physics core requirement.   |
|                            | 3  | PHYS 4305   | Statistical Mechanics   |               |     | PHYS 3303 and PHYS 3411.  |   |
| SPRING                     | 3  | PHYS 4306 or PHYS 4101  | Advanced Physics Lab or Laboratory Research   |               |     | Consent of Instructor.  | Choose either PHYS 4306 or 4101. PHYS 4101 to be taken three times.   |
|                            | 3  | Choose 1  | Language, Philosophy & Culture (Core)   |               | 040 |   | See General Education Core for course options.  |
|                            | 3  | PHYS 33XX-43XX  | Advanced Physics Elective   |               |     |   | See degree plan for course options.   |
|                            |  |   |   |               |     |   |   |
|                            | 16   | Semester Total Hours  |   |               |     |   |   |
|                            | 16<br>H  | Semester Total Hours<br>Course #  | Course Title  | Min.<br>Grade | GEC | Prerequisite  | Additional Notes  |
|                            | _  |   | Course Title<br>Quantum Mechanics I   |               | GEC | Prerequisite<br>PHYS 3305 and PHYS 3411.  | Additional Notes Physics core requirement.  |
|                            | н  | Course #  |   |               | GEC |   |   |
| FALL                       | н  | Course #<br>PHYS 4303   | Quantum Mechanics I   |               | GEC | PHYS 3305 and PHYS 3411.  | Physics core requirement.   |
| FALL                       | н<br>3   | Course #<br>PHYS 4303<br>PHYS 4101  | Quantum Mechanics I<br>Laboratory Research  |               | GEC | PHYS 3305 and PHYS 3411.<br>Consent of instructor.  | Physics core requirement.<br>Not needed if PHYS 4306 taken.   |
| H YEAR FALL                | н<br>3<br>3  | Course #<br>PHYS 4303<br>PHYS 4101<br>PHYS 3304   | Quantum Mechanics I<br>Laboratory Research<br>Optics  |               | GEC | PHYS 3305 and PHYS 3411.<br>Consent of instructor.<br>MATH 2415 and PHYS 2426 and PHYS 2327   | Physics core requirement.         Not needed if PHYS 4306 taken.         Physics core requirement.  |
| FOURTH YEAR<br>FALL        | н<br>3<br>3<br>3<br>3  | Course #<br>PHYS 4303<br>PHYS 4101<br>PHYS 3304<br>PHYS 3301  | Quantum Mechanics I<br>Laboratory Research<br>Optics<br>Electromagnetic Theory I  |               | GEC | PHYS 3305 and PHYS 3411.<br>Consent of instructor.<br>MATH 2415 and PHYS 2426 and PHYS 2327   | Physics core requirement.         Not needed if PHYS 4306 taken.         Physics core requirement.         Physics core requirement.  |
| Fourth YEAR<br>FALL        | н<br>3<br>3<br>3<br>3  | Course #           PHYS 4303           PHYS 4101           PHYS 3304           PHYS 3301           PHYS 33XX-43XX               | Quantum Mechanics I<br>Laboratory Research<br>Optics<br>Electromagnetic Theory I  |               | GEC | PHYS 3305 and PHYS 3411.<br>Consent of instructor.<br>MATH 2415 and PHYS 2426 and PHYS 2327   | Physics core requirement.         Not needed if PHYS 4306 taken.         Physics core requirement.         Physics core requirement.  |
| FOURTH YEAR<br>FALL        | н<br>3<br>3<br>3<br>3<br>3<br>12                                   | Course #<br>PHYS 4303<br>PHYS 4101<br>PHYS 3304<br>PHYS 3301<br>PHYS 33XX-43XX<br>Semester Total Hours                          | Quantum Mechanics I<br>Laboratory Research<br>Optics<br>Electromagnetic Theory I<br>Advanced Physics Elective   |               | GEC | PHYS 3305 and PHYS 3411.<br>Consent of instructor.<br>MATH 2415 and PHYS 2426 and PHYS 2327<br>MATH 2415 and PHYS 2426.               | Physics core requirement.         Not needed if PHYS 4306 taken.         Physics core requirement.         Physics core requirement.         See degree plan for course options.  |
| FOURTH YEAR<br>FALL        | н<br>3<br>3<br>3<br>3<br>3<br>12<br>3                              | Course #<br>PHYS 4303<br>PHYS 4101<br>PHYS 3304<br>PHYS 3301<br>PHYS 33XX-43XX<br>Semester Total Hours<br>PHYS 3302             | Quantum Mechanics I<br>Laboratory Research<br>Optics<br>Electromagnetic Theory I<br>Advanced Physics Elective<br>Electromagnetic Theory II  |               |     | PHYS 3305 and PHYS 3411.<br>Consent of instructor.<br>MATH 2415 and PHYS 2426 and PHYS 2327<br>MATH 2415 and PHYS 2426.               | Physics core requirement.         Not needed if PHYS 4306 taken.         Physics core requirement.         Physics core requirement.         See degree plan for course options.         Physics core requirement.  |
| FOURTH YEAR<br>SPRING FALL | н<br>3<br>3<br>3<br>3<br>3<br>3<br>12<br>3<br>1                    | Course #<br>PHYS 4303<br>PHYS 4101<br>PHYS 3304<br>PHYS 3301<br>PHYS 33XX-43XX<br>Semester Total Hours<br>PHYS 3302<br>Choose 1 | Quantum Mechanics I         Laboratory Research         Optics         Electromagnetic Theory I         Advanced Physics Elective         Electromagnetic Theory II         Integrative/Experiential Learning Option (Core) |               |     | PHYS 3305 and PHYS 3411.<br>Consent of instructor.<br>MATH 2415 and PHYS 2426 and PHYS 2327<br>MATH 2415 and PHYS 2426.<br>PHYS 3301. | Physics core requirement.         Not needed if PHYS 4306 taken.         Physics core requirement.         Physics core requirement.         See degree plan for course options.         Physics core requirement.         See General Education Core for course options.                                   |
| FOURTH YEAR<br>SPRING      | н<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>1<br>2<br>3<br>1<br>3<br>3 | Course #<br>PHYS 4303<br>PHYS 4101<br>PHYS 3304<br>PHYS 3301<br>PHYS 3301<br>PHYS 3302<br>Choose 1<br>PHYS 4304                 | Quantum Mechanics I<br>Laboratory Research<br>Optics<br>Electromagnetic Theory I<br>Advanced Physics Elective<br>Electromagnetic Theory II<br>Integrative/Experiential Learning Option (Core)<br>Quantum Mechanics II       |               |     | PHYS 3305 and PHYS 3411.<br>Consent of instructor.<br>MATH 2415 and PHYS 2426 and PHYS 2327<br>MATH 2415 and PHYS 2426.<br>PHYS 3301. | Physics core requirement.         Not needed if PHYS 4306 taken.         Physics core requirement.         Physics core requirement.         See degree plan for course options.         Physics core requirement.         See General Education Core for course options.         Physics core requirement. |

120 TOTAL HOURS

(42) Advanced minimum credit hours

Approved: Tuesday, December 6, 2022

Revised: Sunday, December 4, 2022