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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | https://my.graceland.edu/ICS/icsfs/mm/graceland_black-small.jpg?target=da86919d-65cb-49a4-9de9-a4437a994a81**Bachelor of Science (B.S.) Degree:**  **Biology and Chemistry (Double Major)** | | | | | | | |
| **Year: 2016-2017**  **Courses in BOLD are required by this major**  Courses in regular type are to fulfill essential education requirements and DO NOT have to be taken the specific semester stated.  ***Courses in ITALIC are strongly recommended***  **ALSO REQUIRED FOR GRADUATION**   * **120 credit hours** * **39 Upper division credits** * **2.00 GPA** * **Completion of all major & essential education requirements** |  | | | | | | | |
|  | **First Year Fall** | **Learning Outcome** | **Sem Hours** | **Date Met** | **First Year Spring** | **Learning Outcome** | **Sem Hours** | **Date Met** |
|  | **BIOL1500 Fund of Ecol & Evol** |  | **3** |  | **BIOL1520 Fund of Org. Biology** |  | **4** |  |
|  | **CHEM1430/1431 Prin of Chem I w/lab** |  | **4** |  | **CHEM1440/1441 Prin Chem. II w/lab** |  | **4** |  |
|  | **MATH1510 Calculus I** |  | **3** |  | **MATH1520 Calculus II** |  | **3** |  |
|  | ENGL1100 Discourse I OR  ENGL1120 Honors Discourse I |  | **3** |  | Essential Education Class |  | 3 |  |
|  | INTD1100 Critical Thinking in Arts & Sciences\* |  | **3** |  | Essential Education Class |  | 3 |  |
|  | **Total Hours** |  |  |  | **Total Hours** |  |  |  |
|  | **Notes: Think about student leadership positions, volunteering or joining a club or organization on campus (Science club, etc.)** | | | | | | | |
|  | **Second Year Fall**  ***(meet w/ advisor in your major(s)!)*** | **Learning Outcome** | **Sem**  **Hours** | **Date Met** | **Second Year Spring** | **Learning Outcome** | **Sem Hours** | **Date Met** |
|  | **CHEM3410/3411 Organic Chem I w/lab** |  | **4** |  | **CHEM3420/3421 Organic Chem II w/lab** |  | **4** |  |
|  | **PHYS1410 Elements of Physics I w/lab** |  | **4** |  | **PHYS1420 Elements of Phys II w/lab** |  | **4** |  |
|  | ENGL2100 Discourse II OR ENGL2120 Honors Discourse II |  | **3** |  | **BIOL2100 Fund of Cell Bio & Gen** |  | **4** |  |
|  | **BIOL2440 Plant Biology** or **BIOL2430 Animal Biology** or Essential Education Class  Essential Education Class |  | **3-4**  **3** |  | Essential Education Class |  | 3 |  |
|  | **Total Hours** |  |  |  | **Total Hours** |  |  |  |
|  | **Connect with your faculty advisor early the Junior year to discuss internships, graduate school admission, and mentoring programs. Notes:** | | | | | | | |
|  | **Third Year Fall**  ***(check your degree audit!)*** | **Learning Outcomes** | **Sem**  **Hours** | **Date Met** | **Third Year Spring**  ***(check your degree audit!)*** | **Learning Outcome** | **Sem Hours** | **Date Met** |
| **\* See Catalog for specific information**  **+ Denotes courses offered only every other year** | **CHEM3610+ Phys Chem I w/Lab** (*odd fall*) |  | **4** |  | **CHEM3620+ Phys. Chem II w/Lab** *(even spring)* |  | **4** |  |
|  | ENGL3100 Discourse III |  | **3** |  | *CSIT1100**Principles of Computing\*\** |  | 3 |  |
|  | **CHEM4310 Biochem** |  | **4** |  | **Biology Elective\*\*** |  | **3 or 4** |  |
|  | **Biology Elective\*\*** |  | **3 or 4** |  | **CHEM3110 Chem Seminar I** |  | **1** |  |
|  | **MATH1380 Intro to Statistics** |  | **3** |  | **Biology Elective\*\*** |  | **3 or 4** |  |
|  | **Total Hours** |  |  |  | **Total Hours** |  |  |  |
|  | **Notes:** | | | | | | | |
|  |  | | | | | | | |
|  | **Fourth Year Fall**  ***(apply for graduation!)*** | **Learning Outcome** | **Sem**  **Hours** | **Date Met** | **Fourth Year Spring** | **Learning Outcome** | **Sem Hours** | **Date Met** |
|  | **CHEM4330+ Instrumental Analysis W/Lab** *(even fall)* |  | **4** |  | **CHEM3300+ Analytical Chemistry W/Lab** *(odd spring)* |  | **4** |  |
|  | **BIOL/CHEM4120 Research I** |  | **1** |  | **BIOL/CHEM4130 Research II** |  | **1** |  |
|  | **BIOL4110 Bio Seminar** |  | **1** |  | **CHEM4110 Chem Seminar II** |  | **1** |  |
|  | Essential Education Class |  | **3** |  | **Biology Elective \*\*\*** |  | **3** |  |
|  | Essential Education Class |  | **3** |  | **Biology Elective\*\*\*** |  | **3-4** |  |
|  | **Biology Elective\*\*** |  | **3 or 4** |  | Essential Education Class |  | 3 |  |
|  | **Total Hours** |  |  |  | **Total Hours** |  |  |  |
|  | **Notes:** | | | | | | | |
| **Updated:**  **10/26/2017** |  | | | | | | | |
|  | **\* Graduation requirement for all first time freshmen**  \*\* Choose four of the following courses in at least two areas (13-16 sh) **AREA 1**: BIOL2360, 2430, 2440, 3400 **AREA 2**: BIOL3310, 3500, 4310, 4450, 4460 **AREA 3**: BIOL3420, 3440, 4400 \*\*\*For students planning to attend professional or graduate school, there are several strongly recommended bio courses: **Professional School Recommendations:** ATHT2500, BIOL2360,BIOL3120, BIOL3120, BIOL3310, BIOL3420, BIOL3440, BIOL3500, BIOL4310, BIOL4450, MATH1380, MATH15100 **Graduate School Recommendations:** BIOL3120, 3 BIOL electives depending on field of interest, MATH1380, MATH1510 **Please meet with your faculty advisor to discuss these recommended courses.**  **DISCLAIMER: These plans are to be used as guides only and are subject to changes in curriculum requirements. Refer to your Graceland Catalog for complete and accurate information. Some courses listed on the plans may have prerequisites that have not been stated. The student has the ultimate responsibility for scheduling and meeting the graduation requirements.** | | | | | | | |
| **Name:**  **ID:** |  | | | | | | | |
|  |  | | | | | | | |