**Incoming Freshmen Guide**

**University of Hawaii at Manoa, College of Engineering AY 2015-2016**

1. **Placement Exams**

**Math Placement Exam**

The math placement exam is normally taken in person on the UHM campus. There are also options to take the math placement off-campus. Information about the math placement exam can be found at the following website.

<http://math.hawaii.edu/placement>

Who needs to take the math placement exam?

Math is very important towards making good progress in any engineering degree. Ideally, engineering freshmen should be starting with at least Calculus I (MATH 241) or higher in their first semester. Math 241 is one of the most important pre-requisites to the engineering curriculum. Passing Math 241 allows students to move forward into the physics and the first engineering courses. In any case, all engineering students will need to finish the entire calculus series and so should be taking an appropriate level math course in the one of the following series. Student may place into their math course based on certain SAT, ACT, AP, and IB exam scores or by taking the math placement exam.

The following table explains what the student may get credit for and/or what they can place into based on their scores in the SAT, ACT, AP, or IB exams. **If none of the following apply to you, you will need to take the math placement exam to determine which math class you should be taking.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Exam** | **Score** | **Course Credit** | **Action** |
| SAT | 700+ | none | Student may register for **Math 241** without placement exam |
| 630+ | none | Student may register for **Math 140** without placement exam **OR** Student may take placement exam to place into Math 241 |
| ACT | 31+ | none | Student may register for **Math 241** without placement exam |
| 29+ | none | Student may register for **Math 140** without placement exam **OR** Student may take placement exam to place into Math 241 |
| AP Calculus AB | 4 or 5 | Math 241 | Student gets credit for **Math 241** and may register for **Math 242** without placement exam |
| 3 | none | Student may register for **Math 241** without placement exam |
| AP Calculus BC | 4 or 5 | Math 241 & Math 242 | Student gets credit for **Math 241 & 242** and may register for **Math 243** without placement exam |
| 3 | Math 241 | Student gets credit for **Math 241** and may register for **Math 242** without placement exam |
| IB Math HL | 5,6, or 7 | Math 241 | Student gets credit for **Math 241** and may register for **Math 242** without placement exam |
| 4 | none | Student may register for **Math 241** without placement exam |

Which math course should I take?

**Pre-calculus courses: MATH 135 🡪 Math 140 🡪 start calculus series**

A student may start in pre-calculus if they do not place into calculus. If the student has not previously taken trigonometry or pre-calculus, they should start here to get a good foundation for calculus. A student must place into Math 140 either through SAT/ACT scores or the math placement exam. Passing Math 140 allows the student to take Math 241 the following semester. Math 135 does not require any placement exam, however, students are encouraged to try to place into Math 140 and take Math 135 if they do not place into Math 140.

**Standard 4 semester calculus series: Math 241 🡪 Math 242 🡪 Math 243 🡪 Math 244**

Engineering students must successfully pass the full series of calculus as part of their curriculum. With a high enough score on the math placement, SAT, ACT, or AP exams, students may start in one of the calculus courses. Do not take any other calculus courses like business calculus (Math 203) or applied calculus (Math 215) as they do not count towards the engineering degree. Unless the student plans to do the accelerated/honors calculus series (Math 251A-253A), they should take/earn credit for Math 241-244.

**Honors / Accelerated 3 semester calculus series: Math 251A 🡪 Math 252A 🡪 253A**

Students who are in the honors program and/or feel confident in their math skills may try for the accelerated calculus series, Math 251A-253A. This accelerated series completes calculus in 3 semesters instead of 4 semesters. Students will need to place into this series with high scores on the placement exam or may interview with the math department. To enroll in Math 251A, students should contact the Math Dept. Assoc. Chair at (808)-956-4679 or office@math.hawaii.edu.

**Chemistry Placement Exam**

The chemistry placement exam is offered online and can be taken anywhere that the student has access to a computer and reliable internet connection. The student has two chances to pass the chemistry placement exam per semester. If the student does not pass the exam on the first try, they must wait at least 24 hours before trying again. Taking it before the 24 hour period is up will result in voiding the second chance. Information about the chemistry placement exam can be found at the following website.

http://manoa.hawaii.edu/chem/academics/undergraduate/placement-exam/

Who needs to take the chemistry placement exam?

All engineering students are required to finish two semesters of general chemistry and one lab, Chem 161/161L and Chem 162, or the accelerated one semester equivalent, Chem 171/171L. **Students need to pass the chemistry placement exam to take Chem 161 and 161L or Chem 171 and 171L unless they have earned AP credit for Chem 161**. Students who do not pass the exam within two tries may either wait to take the exam again next semester or take Chem 131, which is the prep for general chemistry. Passing Chem 131 allows the student to take Chem 161 and 161L the following semester.

|  |  |  |  |
| --- | --- | --- | --- |
| **Exam** | **Score** | **Course Credit** | **Action** |
| AP Chemistry | 5 | Chem 161 and 162 | Student earns credit for **Chem 161** and **Chem 162** and will not need to take any further chemistry lecture courses. |
| 4 | Chem 161 | Student earns credit for **Chem 161** and may register for **Chem 162** without the placement exam. |

\* Waiver of the required Chem 161L lab is determined by chemistry department. Students should bring their AP chemistry lab notebook to the chemistry department for review.

1. **AP Exam Credit**

The following table explains what the student may get credit for based on their AP exam scores. Math and Chemistry AP exam credits are explained in the previous placement exams sections.

|  |  |  |  |
| --- | --- | --- | --- |
| **Exam** | **Score** | **Course (Credits)** | **Relevance for Engineering Students** |
| Art History | 4-5 | ART 101 (3) | extra credits |
| Art Studio | 3-5 | ART (DA) (3) | extra credits |
| Biology | 3 | BIOL (DB) (3) | extra credits |
|  | 4 - 5 | BIOL 171 & 172 (6) | BIOL 171 fulfills: TE for ME students or BSE for CE students |
| Chemistry | 4 | Chem 161 | Fulfills engineering requirement |
| 5 | Chem 161 and 162 | Fulfills engineering requirement |
| Computer Science A | 3 - 5 | ICS 111 (4) | Fulfills programming requirement for CE and CENG students |
| Computer Science AB | 3 | ICS 111 (4) | Fulfills programming requirement for CE and CENG students |
| 4 - 5 | ICS 111 & 211 (7) | Fulfills programming requirement for CE and CENG students |
| Economics |  |  |  |
| Macroeconomics | 3 | ECON (DS) | extra credits, does NOT fulfill engineering econ requirement\* |
|  | 4 - 5 | ECON 131 (3) | Fulfills DS and economics requirement |
| Microeconomics | 3 | ECON (DS) | extra credits, does NOT fulfill engineering econ requirement\* |
|  | 4 - 5 | ECON 130 (3) | Fulfills DS and economics requirement |
| English - Lang & Comp | 4 - 5 | ENG 100 (3) | Fulfills the FW requirement |
| English - Lit & Comp | 4 - 5 | ENG 100 or DL (3) | Fulfills either the FW or DL requirement |
| Environmental Science | 3 - 5 | DB (3) | extra credits |
| Govt & Pol - US | 3 - 5 | POLS 130 (3) | Fulfills DS requirement |
| Govt & Pol - Comp | 3 - 5 | POLS 110 (3) | Fulfills DS requirement |
| History - European *(Exams taken May 2014 or after)* | 3 | HIST (DH) (3) | Fulfills DH requirement |
|  | 4 - 5 | HIST 231 & 232 (6) | Fulfills DH requirement |
| History - US *(Exams taken May 2014 or after)* | 3 | HIST (DH) (3) | Fulfills DH requirement |
|  | 4 - 5 | HIST 281 & 282 (6) | Fulfills DH requirement |
| History - World *(Exams taken May 2014 or after)* | 3-5 | HIST 151 & 152 (6) | Fulfills both FG requirements, from Group A and B |
| Human Geography | 3 - 5 | GEOG 151 (3) | Fulfills one FG requirement from Group C |
| Music Theory | 3 - 5 | MUS 108 (3) | extra credits |
| Music Listening & Lit | 3 - 5 | MUS 106 (3) | Fulfills DH requirement |
| **Physics** |  |  |  |
| Physics B *(Entering before Fall 2016)* | 3 - 5 | PHYS 151, 151L & 152, 152L (8) | Does **not** fulfill physics lecture requirements for engineering students. Credit for PHYS 151L & 152L may be substituted for the required Phys 170L & 272L. |
| Physics C Mechanics  *(Entering before Fall 2016)* | 3 - 5 | PHYS 170 & 170L (5) | Fulfills first physics req. for engineering students |
| Physics C Electricity & Magnetism  *(Entering before Fall 2016)* | 3 - 5 | PHYS 272 & 272L (4) | Fulfills second physics req. for engineering students |
| Physics 1 Only | 3 - 5 | PHYS 151 (3) (credit for lab to be determined by dept. review) | Does **not** fulfill physics lecture requirements for engineering students. If credit given for lab, PHYS 151L may be substituted for the required Phys 170L. |
| Physics 2 only | 3 - 5 | DP (3) | Does **not** fulfill physics lecture requirements for engineering students. |
| If Physics 1 and 2 taken together: | | | |
| Physics 1 | 1 - 2 | DP (3) | Does **not** fulfill physics lecture requirements for engineering students. |
| Physics 2 | 3 - 5 |  |  |
| Physics 1 | 3 - 5 | PHYS 151 (3) (credit for lab to be determined by department review) | Does **not** fulfill physics lecture requirements for engineering students. If credit given for lab, PHYS 151L may be substituted for the required Phys 170L. |
| Physics 2 | 1 - 2 |
| Physics 1 | 3 - 5 | PHYS 151 & 152 (6) (credit for labs to be determined by department review) | Does **not** fulfill physics lecture requirements for engineering students. If credit given for lab, PHYS 151L & 152L may be substituted for the required Phys 170L & 272L. |
| Physics 2 | 3 - 5 |
| Psychology | 3 - 5 | PSY 100 (3) | Fulfills DS requirement |
| Statistics | 3 - 5 | SOCS 225 (3) | Fulfills DS requirement |

\* Credit for ECON (DS) does NOT cover the engineering econ requirement. Student will still need to take one of Econ 120, 130, or 131. Student will also still need to take another social science (DS) course from a different department outside of Econ to fulfill the 2 social sciences (DS) needed for general education.

Subject to change without prior notice. Please also refer to UHM’s AP document. <https://manoa.hawaii.edu/admissions/undergrad/pdf/AP.pdf>

1. **UHM General Education Requirements:**

There are four types of UHM general education requirements that are required for all students graduate.

1. Foundation
2. Diversification
3. Focus
4. Hawaiian or Second Language (HSL)

The following sections describe the requirements as they work with the different engineering curricula. For more information of any of the general education requirements, please visit the catalog website.

<http://www.catalog.hawaii.edu/corerequirements/index.html>

**Foundation Requirements:**

* **3 credits of Foundation Writing (FW):** To be fulfilled by ENG 100
* **3 credits of Foundation Symbolic Reasoning (FS):** To be fulfilled by MATH 241
* **6 credits of Foundation Global and Multicultural Perspectives (FG):**

To fulfill this requirement, students must take a total of six credits (2 courses); the 2 courses must come from different groups. The course listings for the 3 different FG groups may be found at the following website. <http://www.catalog.hawaii.edu/corerequirements/core-req.htm>

**Diversification Requirements:**

* **Social Sciences (DS): 6 credits**

Students need 2 social science (DS) courses to graduate. The College of Engineering already requires engineering students to take any one of ECON 120, 130, or 131 which fulfills one of the DS requirements. The other DS course must be from a different subject which means a DS that is not another ECON course.

* **Arts, Humanities, and Literature (DA, DH, DL): 6 credits**

Students must take two of the three different areas: Arts (DA), Humanities (DH), and Literatures (DL). The College of Engineering already requires engineering students to take COMG 251 which fulfills the DA. To fulfill the rest of the requirement, students will need to take either a DH or DL course.

* **Natural Sciences (DB, DP and DY): 7 credits**

All engineering majors have enough required courses (physics, chemistry, etc.) that will fulfill the natural science requirements.

**Focus Requirements:**

* **Hawaiian, Asian, and Pacific Issues (H or HAP): 1 course**

All engineering students must do an H focus course of their choice. Some popular options include:

HWST 107 (H, DH)

PACS 108 (H, DS)

LING 150B (H, DS) or LING 150C (H, DS, W)

* **Contemporary Ethical Issues (E or ETH): 1 course, 300 or 400 lvl**

All engineering students have an E focus course already required in their curriculum and will fulfill this requirement as they complete the degree.

* **Oral Communication (O or OC): 1 course, 300 or 400 lvl**

All engineering students have an O focus course already required in their curriculum and will fulfill this requirement as they complete the degree.

* **Writing Intensive (W or WI): 5 courses, at least 2 at 300 or 400 lvl**

Civil and Mechanical engineering students have all 5 W courses built into their curriculum and will fulfill this requirement as they complete the degree.

Electrical and Computer engineering students have at least 2-3 W courses required in the curriculum. It is sometimes possible to get all 5 W courses out of the upper division courses but we typically recommend EE and CENG students to consider doing 1 or 2 W courses of their choice (can be lower division).

**Hawaiian or Second Language requirement (HSL) is waived for all engineering students.**

All engineering students do not have to take a second language.

1. **Which courses should you be taking?**

The College of Engineering has curricular check sheets for each major to help track your progress through the engineering program. The entire curriculum including the general education is sequenced out into a 4 year plan. The check sheets may be found on the college website.

<http://www.eng.hawaii.edu/current-students/undergraduate-students/advisement-academic-services/check-sheets/>

Math (3 or 4 credits) - Based on placement exam or other scores, students choose an appropriate math class.

Eng 100 (3 credits) – English 100 is only open to freshmen at UHM. Students must complete Eng 100 in the freshman year or they will need to take it during summer school or at a community college. If the classes fill up in the fall semester, students can take it in the spring semester of their freshmen year.

Chem 161 and 161L (3 + 1 credits) – Passing the chemistry placement exam allows students to register for Chem 161 and 161L. If a student does not pass the placement exam, they may consider taking Chem 131.

The general education courses are also good options (see above section for more details):

* FG courses
* COMG 251 (DA)
* any one of Econ 120, 130, or 131 (DS)
* H focus course

Students will need at least 12 credits to be considered fulltime. We recommend that incoming students take around 13-15 credits so that they have time to adjust to college.

1. **Orientation Programs**

**Blueprints: *Engineering your Manoa Success***

Blueprints is the College of Engineering’s welcoming and orientation event for first time incoming freshmen, transfer students, and families. Engineering students will be able to design their own blueprint to success at UH Manoa while meeting the faculty, listening to industry leaders, learning about the opportunities offered, and making new friends.

Date: August 21, 2015

Registration information will be sent to you soon as a postcard in the mail.

**New Student Orientation (NSO)**

NSO is the general orientation for students of all majors at the University of Hawaii at Manoa. More information can be found at <http://www.hawaii.edu/nso/>. The orientation program includes:

* Insightful and helpful advice from current students
* Opportunity to meet UHM faculty from different departments
* A resource fair featuring various on-and-off-campus programs and services
* A campus tour
* Priority registration
* Breakfast, lunch and snacks
* A chance to meet other students new to UHM!

Dates: Various dates and registration are available online. <http://www.hawaii.edu/nso/>.