

# **Houston GPS Math, Science, and Health Sciences\***

## **Meta-Major Map Document**

\*Kinesiology map is being edited and will be added back once finalized.

## Map Guidelines

- Houston GPS maps include courses that apply to lower-level requirements in specified degrees across Houston GPS institutions without resulting in excess credit upon transfer. Courses are in the Lower-Division Academic course Guide Manual (ACGM) and course numbers provided are those in the Texas Common Course Numbering System.
- [Field of Study Curricula](#) approved by the Texas Higher Education Coordinating Board are incorporated into maps.
- The following [Texas Core Curriculum](#) requirements are incorporated into maps:

| <b>Code</b>  | <b>Component Area</b>            | <b>SCH</b> |
|--------------|----------------------------------|------------|
| 010          | Communication                    | 6          |
| 020          | Mathematics                      | 3          |
| 030          | Life and Physical Science        | 6          |
| 040          | Language, Philosophy and Culture | 3          |
| 050          | Creative Arts                    | 3          |
| 060          | American History                 | 6          |
| 070          | Government/Political Science     | 6          |
| 080          | Social and Behavioral Sciences   | 3          |
| 090          | Component Area Option            | 6          |
| <b>Total</b> |                                  | <b>42</b>  |

**Houston GPS  
Math, Science, and Health Sciences Maps**

Biology

The Biology Map for Houston GPS includes the following majors at participating institutions:

| Alvin College          | College of the Mainland | Galveston College   | Houston City College   |
|------------------------|-------------------------|---------------------|--|
| AS, Biological Science | AS, Natural Science     | AS, Biology         | AS, Biology  |
|                        |                         |                     | AS, Biology, Health Science Professions  |
|                        |                         |                     | AS, Biology, Health Science Professions –Pre-Clinical Laboratory Services Specialization |
|                        |                         |                     | AS, Biology, Health Science Professions – Pre-Nursing Specialization                     |
|                        |                         |                     | AS, Biology, Health Science Professions – Pre-Radiologic Sciences Specialization         |
| Lone Star College      |                         | San Jacinto College | Wharton County Junior College  |
| AS, Biology            |                         | AS, Natural Science | AS, Biology  |

| PVAMU       | UH                                     | UH<br>Downtown  | UH<br>Clear Lake   | TAMUV       | TSU         | TWU  |
|-------------|--|---|--|-------------|-------------|--|
| BS, Biology | BA, Biology                            | BS, Biology   | BA, Biology  | BS, Biology | BS, Biology | BS, Biology  |
|             | BS, Biology                            | BS, Biology with Concentration in Environmental Biosciences               | BS, Biology with Physiology/Pre-Health Specialization                                    |             |             | BS, Biology pre-med track                                |
|             | BA, Biochemical & Biophysical Sciences | BS, Biology with Concentration in Microbiology                            | BS, Biology Cellular/Molecular/Biotechnology Specialization                              |             |             | BS, Biology pre-PA track                                 |
|             | BS, Biochemical & Biophysical Sciences | BS, Biology with Concentration in Molecular and Cellular Biosciences      | BS/MS, Biology with Clinical Laboratory Science Specialization (shared degree with UTMB) |             |             | BS Biology, 4-8 Science Teacher Certification            |
|             | BS, Mathematical Biology               | Biological and Physical Sciences, BS                                      | BS, Biology with Ecology/Microbiology/Aquatic/Marine Specialization                      |             |             | BS Biology, 7-12 Life Science Teacher Certification      |
|             | BS, Honors Biomedical Sciences         | BS, Biological and Physical Sciences with Secondary Teacher Certification | BS, Biology with Plant Specialization  |             |             | BS Biology, 7-12 Composite Science Teacher Certification |
|             |  | BA, Biology   | BA, Biology with Life Science 7-12 Certification   |             |             | BS, Medical Laboratory Sciences                          |

Courses in the following representative sequence apply to lower-level requirements in BS and BA in **Biology** degrees across Houston GPS institutions without resulting in excess credit upon transfer. Course numbers provided are those in the Texas Common Course Numbering System.

| <b>Year 1</b>  |  |
|--|--|
| BIOL 1406 or BIOL 1306/1106 Biology for Science Majors with Lab I**  | BIOL 1407 or BIOL 1307/1107 Biology for Science Majors with Lab II**   |
| CHEM 1411 or CHEM 1311/1111 General Chemistry with Lab I**           | CHEM 1412 or CHEM 1312/1112 General Chemistry with Lab II**            |
| MATH 2413 Calculus I (020)*  | Core (090)*  |
| ENGL 1301 Composition I (010)*                                       | ENGL 1302 Composition II (010)*  |
| <b>Year 2</b>  |  |
| CHEM 2423 or CHEM 2323/2123 Organic Chemistry with Lab I**           | PHYS 1401 or PHYS 1301/1101 College Physics with Lab I**               |
| BIOL 2321 Microbiology for Science Majors                            | Creative Arts Core (050)* (or other remaining core)                    |
| HIST 1301 United States History I (060)* (or other remaining core)   | HIST 1302 United States History II (060)* (or other remaining core)    |
| GOVT 2305 Federal Government (070)* (or other remaining core)        | GOVT 2306 Texas Government (070)* (or other remaining core)            |
| Social and Behavioral Sciences Core (080)* (or other remaining core) | Language, Philosophy and Culture Core (040)* (or other remaining core) |

\* Core Curriculum

\*\* Biology Field of Study (effective September 2019; Revision in progress)

Notes Regarding Institutional Exceptions or Special Cases:

AC: AS, Biological Science does not offer math beyond Algebra.

COM: Does not currently offer BIOL 2321

UH: BIOL 2321 fulfills an elective requirement, BIOL1306/1106 and BIOL 1307/1107 fulfill core Life and Physical Science (030), MATH 2413 fulfills core Mathematics (020), and MATH 2414 fulfills core Math Reasoning (090).

The pre-requisite for entry into MATH 2413 at UH is credit for MATH 2312 with a grade of C- or higher or a satisfactory score on a math placement exam. The pre-requisite for entry into CHEM1311 at UH is MATH 2312 or equivalent.

UHCL: MATH 2413 fulfills core Mathematics (020). MATH 2414 not required for Biology majors. Biology 2321 and BIOL 2121 are required for Biology majors (except for the Plant specialization).

BIOL1306/1106 and BIOL 1307/1107 fulfill core Life and Physical Science (030) and two hours of component area option (090) filled by labs. BIOL 2321/2121 are required for Biology majors (except for the Plant specialization). BIOL 2421 will be accepted, but BIOL 2420 will not be accepted for transfer.

SJC: MATH 2413 – Prerequisite(s) enforced.

TWU: BIOL 2321 does not transfer. Recommend students take PHYS 1402 – Physics II with a lab. Students may still want to take 2321 to prepare them for major 3000 level course. MATH 2413 not necessary, only College Algebra needed to transfer.

## Chemistry

The Chemistry Map for Houston GPS includes the following majors at participating institutions:

| Alvin College        | College of the Mainland | Galveston College             | Houston City College |
|----------------------|-------------------------|-------------------------------|----------------------|
| AS, Physical Science | AS, Natural Science     | AS, Chemistry                 | AS, Chemistry        |
|                      |                         |                               |                      |
| Lone Star College    | San Jacinto College     | Wharton County Junior College |                      |
|                      | AS, Natural Science     | AS, Chemistry                 |                      |

| PVAMU   | UH            | UH<br>Downtown  | UH<br>Clear Lake | TAMUV | TSU  | TWU  |
|---|---------------|---|------------------|-------|--|--|
| BS, Chemistry with Concentration in Traditional Chemistry | BA, Chemistry | BS, Chemistry   | BA, Chemistry    |       | BS, Chemistry with Concentration in PreMedical-PreDental | BS, Chemistry  |
| BS, Chemistry with Concentration in Biomedical Science    | BS, Chemistry | BS, Chemistry with Concentration in Biochemistry            | BS, Chemistry    |       | BS, Chemistry with Concentration in Forensic Sciences    | BS, Chemistry ACS Certification                            |
| BS, Chemistry with Concentration in Forensic Science      |               | BS, Chemistry with Concentration in Environmental Chemistry |                  |       |  | BS, Chemistry Environmental Chemistry                      |
|   |               | BS, Chemistry with Concentration in Forensic Sciences       |                  |       |  | BS, Chemistry 7-12 Composite Science Teacher Certification |
|   |               | BS, Chemistry with Concentration in Industrial Chemistry    |                  |       |  | BS, Chemistry 6-12 Physical Science Teacher Certification  |

Courses in the following representative sequence apply to lower-level requirements in **BS and BA, Chemistry** degrees across Houston GPS institutions without resulting in excess credit upon transfer. Course numbers provided are those in the Texas Common Course Numbering System.

| Year 1   |  |
|--|--|
| CHEM 1411 or CHEM 1311/1111 General Chemistry with Lab I             | CHEM 1412 or CHEM 1312/1112 General Chemistry with Lab II              |
| MATH 2413 Calculus I   | MATH 2414 Calculus II  |
| ENGL 1301 Composition I (010)*                                       | ENGL 1302 Composition II (010)*  |
| HIST 1301 United States History I (060)* (or other remaining core)   | HIST 1302 United States History II (060)* (or other remaining core)    |
| Social and Behavioral Sciences Core (080)* (or other remaining core) |  |
| Year 2   |  |
| CHEM 2423 or CHEM 2323/2123 Organic Chemistry I with Lab I           | CHEM 2425 or CHEM 2325/2125 Organic Chemistry II with Lab II           |
| PHYS 2425 or PHYS 2325/2125 University Physics I with Lab I          | PHYS 2426 or PHYS 2326/2126 University Physics II with Lab II          |
| GOVT 2305 Federal Government (070)* (or other remaining core)        | GOVT 2306 Texas Government (070)* (or other remaining core)            |
| Creative Arts Core (050)* (or other remaining core)                  | Language, Philosophy and Culture Core (040)* (or other remaining core) |
| Component Area Option Core (090)*                                    |  |

\* Core Curriculum

Notes Regarding Institutional Exceptions or Special Cases:

AC: AS, Physical Science does not offer math beyond Calculus; CHEM 2425 not offered.

UH: CHEM1311/1111 and CHEM 1312/1112 fulfill core Life and Physical Science (030), MATH 2413 fulfills core Mathematics (020), and MATH 2414 fulfills core Math Reasoning (090). -The pre-requisite for entry into MATH 2413 at UH is credit for MATH 2312 with a grade of C- or higher or a satisfactory score on a math placement exam. The pre-requisite for entry into CHEM1311 at UH is MATH 2312 or equivalent.

TWU: CHEM 2425 will transfer as a 2000 level course; students will need to get it reviewed by the department and potentially need to take an additional major course.

Computer Science

The Computer Science Map for Houston GPS includes the following majors at participating institutions:

| <b>Alvin College</b>     | <b>College of the Mainland</b> | <b>Galveston College</b>   | <b>Houston City College</b>          |
|--------------------------|--------------------------------|----------------------------|--------------------------------------|
| AS, Computer Science     | AS, Computer Science           | AS, Computer Science       | AS, Computer Science                 |
|                          |                                |                            |                                      |
| <b>Lone Star College</b> |                                | <b>San Jacinto College</b> | <b>Wharton County Junior College</b> |
| AS, Computer Science     |                                | AS, Computer Science       | AS, Computer Science                 |

| <b>PVAMU</b>                          | <b>UH</b>            | <b>UH<br/>Downtown</b> | <b>UH<br/>Clear Lake</b> | <b>TAMUV</b>         | <b>TSU</b>   | <b>TWU</b>                           |
|---------------------------------------|----------------------|------------------------|--------------------------|----------------------|--|--------------------------------------|
| BS, Computer Science                  | BS, Computer Science | BS, Computer Science   | BS, Computer Science     | BS, Computer Science | BS, Computer Science                                       | BS, Computer Science                 |
| BS, Computer Sciences - Cybersecurity |                      | BS, Cyber Security     |                          |                      | BS, Computer Science – Computer Networks                   | BS, Data Science and Informatics     |
| BS, Computer Science - Data Science   |                      |                        |                          |                      | BS, Computer Science – Machine Learning and Data Analytics | BS, Health Informatics               |
| 4+1 BS/MS                             |                      |                        |                          |                      |  | BS, Computer Science - Cybersecurity |

Courses in the following representative sequence apply to lower-level requirements in **Computer Science** degrees across Houston GPS institutions without resulting in excess credit upon transfer. Course numbers provided are those in the Texas Common Course Numbering System.

| Year 1   |  |
|--|--|
| COSC 1436 Programming Fundamentals I   | COSC 1437 Programming Fundamentals II  |
| MATH 2413 Calculus I (020)*  | MATH 2414 Calculus II  |
| ENGL 1301 Composition I (010)*   | ENGL 1302 Composition II (010)*  |
| HIST 1301 United States History I (060)*   | HIST 1302 United States History II (060)*  |
| GOVT 2305 Federal Government (070)*  | GOVT 2306 Texas Government (070)*  |
| Year 2   |  |
| COSC 2436 Programming Fundamentals III   | COSC 2325 or 2425 Computer Organization  |
| PHYS 2425 University Physics I (030)* (lecture + lab) <u>or</u>                      | PHYS 2426 University Physics II (030)* (lecture + lab) <u>or</u>                       |
| PHYS 2325 University Physics I (lecture) and<br>PHYS 2125 University Physics I (lab) | PHYS 2326 University Physics II (lecture) and<br>PHYS 2126 University Physics II (lab) |
| MATH 2305 Discrete Mathematics   | Language, Philosophy, and Culture Core (040)*  |
| Social and Behavioral Sciences Core (080)*   | Creative Arts Core (050)*  |
| Component Area Option Core (090)*  | Elective   |

\* Core Curriculum

Notes Regarding Institutional Exceptions or Special Cases:

Additional Component Area Option Core (090) will likely be satisfied by an additional course (usually Algebra, Pre-Calculus, and Calculus).

Students may not be core complete but may be Field of Study complete.

Pre-Calculus is a prerequisite and will result in excess credits. Students should be placed in highest math possible.

AC: Changed to COSC 2436 and added Component area option core (090) in Fall 2024; Offers Computer Organization as COSC 2325 instead of COSC 2425; does NOT require MATH 2414 Calculus II and MATH 2305 Discrete Mathematics; Instead of elective, students must take math core (Recommend MATH 1314 or MATH 2412). Note: COSC 1436 is Python; COSC 1437 is Java; COSC 2436 Programming Fundamentals 3 is C++.

COM: Does not require MATH 2414, MATH 2305 instead students take PSYCH1300 and SPCH 1315; Does not require PHYS 2426, students can choose from Biology, Environmental Science, and General Chemistry. COSC 2336 is required instead of COSC 2436 and COSC 1336 is required (3 SCH) instead of COSC 1436.

- HCC: Does not require MATH 2305 students should instead take MATH 2412 Pre-Calculus Math; Require EDUC 1300; No component; No Creative Arts; No Language/Philosophy/Culture; 16 hours in COSC 1436, 1437, 2436, 2425 classes (I, II, III, Computer Organization)
- LSC: HIST 1302 US History II and GOVT 2306 Texas Government are not required. May take HIST 1302 as an elective. Students are required to take CHEM 1411 (General Chem 1), MATH 2318 (Linear Algebra), and EDUC 1300 (1<sup>st</sup> Year Experience). Offers Computer Organization as COSC 2325 instead of COSC 2425.
- SJC: Students taught Python, C++, and Assembly.
- PVAMU: ENGL 1302 not required, instead students take ENGL 2311 Tech Writing. Science courses required: CHEM 1303, CHEM 1111 General Inorganic Chemistry 1 and Lab 1, PHYS 2325 and PHYS 2125 University Physics 1 and Lab 1, plus 4 SCH of other science courses.
- UH: Recommend students learn Python and C++. COSC 1336 and COSC 1436 will transfer in as COSC 1336 and accepted to meet the Programming Fundamentals I requirement. PHYS 2425 and PHYS 2426 fulfill core Life and Physical Science (030)  
MATH 2413 fulfills core Mathematics (020), and MATH 2414 fulfills core Math Reasoning (090). The pre-requisite for entry into MATH 2413 at UH is credit for MATH 2312 with a grade of C- or higher or a satisfactory score on a math placement exam.  
Recommend students take MATH 2318 Linear Algebra.  
If students intend to use all coursework listed above, they must be core complete upon transfer.
- UHCL: Recommend students learn Python and Java. PHYS 2425 and PHYS 2426 fulfill Life and Physical Sciences (030) and 2 hours of Component Area (090). MATH 2413 fulfills core Mathematics (020). Elective should be filled by MATH 2318 to meet program requirements. For students who complete MATH 2312 or 2412, this will be used as overflow toward Component Area Option Core (090). COSC 1336/COSC 1436 will transfer in as CSCI 1470; COSC 1337/COSC 1437 will transfer in as CSCI 1471; COSC 2336/COSC 2436 will transfer in as CSCI 2315; and COSC 2325 will transfer in as CSCI 2331.
- UHD: Recommend students learn Python and C++. Students must take MATH 2307 (Linear Algebra). Note that GOVT 2305 and GOVT 2306 is UHD's POLS 2305 and POLS 2306; New CS-I is 1411 (Python) and new CS-II is 2411 (C++). UHD recommends students take SPCH 1311 to satisfy Component Area Option Core (090). Students are not required to take physics: any two Life and Physical Science Core (030) courses with labs will also be accepted. Further, students are not required to take HIST 1301 and HIST1302: any two American History Core (60) will be accepted.
- TAMUV: Recommend students learn C++. COSC 2436 Programming Fundamentals III is equivalent to COSC 3317 Object Oriented Programming; GOVT 2305 & 2306 is equivalent to PSCI 2305 & 2306; Instead of University Physics, students take Life and Physical Sciences including Biology and Chemistry; MATH 2305 Discrete Mathematics is equivalent to MATH 3362 Discrete Structures. Students take College Algebra and Pre-Calculus during Year I and Calculus I & II at Year II; Students take Freshman Seminar during Year I.
- TSU: Recommend students learn C++ and either Java or Python. Students should take C++ in COSC 1436 and either Java or Python in COSC 1437 or either Java or Python in COSC 1436 and C++ in COSC 1437. Does not offer COSC 1436, COSC 1437, and COSC 2436. Will transfer COSC 1436 and 1437 as 4 SCH.
- TWU: Recommend students learn Python and Java. Students can take MATH 1342 for the math requirement for BS, Data Science and Informatics major. For the BS, Computer Science major, Computer Organization and Machine Language (COSC 2425) is required. Does not offer COSC 1436, COSC 1437, and COSC 2436. Will transfer COSC 1436 and 1437 as 4 SCH. COSC 2436 does not transfer.

Earth and Atmospheric Science and Geology

The Earth and Atmospheric Science and Geology Map for Houston GPS includes the following majors at participating institutions:

| <b>Alvin College</b>          | <b>College of the Mainland</b> | <b>Galveston College</b>   | <b>Houston City College</b>          |
|-------------------------------|--------------------------------|----------------------------|--------------------------------------|
| AS, Physical Science          | AS, Natural Science            |                            | AS, Geology                          |
|                               |                                |                            |                                      |
| <b>Lone Star College</b>      |                                | <b>San Jacinto College</b> | <b>Wharton County Junior College</b> |
| AS, Liberal Arts and Sciences |                                | AS, Natural Science        | AS, Geology                          |

| <b>PVAMU</b> | <b>UH</b>   | <b>UH<br/>Downtown</b>  | <b>UH<br/>Clear Lake</b>                                | <b>TAMUV</b> | <b>TSU</b> | <b>TWU</b>                 |
|--------------|---|---|---|--------------|------------|----------------------------|
|              | BA, Earth Science                                     | BS, Geosciences with Concentration in Environmental Geosciences | BS, Environmental Science with Biology specialization   |              |            | B.S. Environmental Science |
|              | BS, Environmental Sciences— Environmental Geosciences | BS, Geosciences with Concentration in Geochemistry              | BS, Environmental Science with Chemistry specialization |              |            |                            |
|              | BS, Environmental Sciences— Atmospheric Science       | BS, Geosciences with Concentration in Petroleum Geotechnology   | BS, Environmental Science with Geology specialization   |              |            |                            |
|              | BS, Geology   |   |   |              |            |                            |
|              | BS, Geophysics  |   |   |              |            |                            |
|              | BS, Atmospheric Science                               |   |   |              |            |                            |

Courses in the following representative sequence apply to lower-level requirements in the **Earth and Atmospheric Science and Geology** degrees across Houston GPS institutions without resulting in excess credit upon transfer. Course numbers provided are those in the Texas Common Course Numbering System.

| Year 1   |  |
|--|--|
| GEOL 1303/1103 Physical Geology and Lab  | CHEM 1312/1112 General Chemistry with Lab II or CHEM 1412 (030)                                |
| CHEM 1311/1111 General Chemistry with Lab I or CHEM 1411 (030)                               | MATH 2414 Calculus II  |
| MATH 2413 Calculus I (020)*  | ENGL 1302 Composition II (010)*  |
| ENGL 1301 Composition I (010)*   | GEOL 1304/1404 Historical Geology  |
| Year 2   |  |
| PHYS 2425 University Physics I plus lab or PHYS 2325/PHYS 2125 University Physics I plus lab | PHYS 2426 University Physics II plus lab or PHYS 2326/PHYS 2126 University Physics II plus lab |
| HIST 1301 United States History I (060)*   | HIST 1302 United States History II (060)*  |
| Creative Arts Core (050)*  | Language, Philosophy, and Culture Core (040)*  |
| GOVT 2305 Federal Government (070)*  | GOVT 2306 Texas Government (070)*  |
| Component Area Option Core (090)*  | Social and Behavioral Sciences Core (080)*   |

\* Core Curriculum

Notes Regarding Institutional Exceptions or Special Cases:

\*\*Two-year institutions may fulfill CAO Core requirement with another course or labs

AC: AS, Physical Science does not offer math beyond Calculus I

COM: MATH 2414 and above not required

HCC: Students are required to take EDUC 1300

WCJC: MATH 2414 and above not required

UH: CHEM1311/1111 and CHEM 1312/1112 fulfill core Life and Physical Science (030).

MATH 2413 fulfills core Mathematics (020), and MATH 2414 fulfills core Math Reasoning (090). The pre-requisite for entry into MATH 2413 at UH is credit for MATH 2312 Precalculus with a grade of C- or higher or a satisfactory score on a math placement exam. The pre-requisite for entry into CHEM1311 at UH is MATH 2312 or equivalent.

GEOL 1304/1404 will be transferred as an elective

Students must take University Physics (not College Physics)

UHCL: GEOL 1303 and 1304 with lab will only count towards Environmental Geology and Physical Geology specializations.

UHCL does not require MATH 2414 or MATH 2415. Accepts College Physics instead of University Physics.

## Health and Wellness

The Health and Wellness Map for Houston GPS includes the following majors at participating institutions:

| Alvin College                    | College of the Mainland | Galveston College                 | Houston City College   |
|----------------------------------|-------------------------|-----------------------------------|--|
| AS, Health Science               | AA, General Studies     | AA, Health and Physical Education | BAS, Healthcare Management   |
| AA, Sports and Human Performance |                         | AS, General Studies               | AA, Multidisciplinary Studies - Kinesiology & Exercise Science Major |
| Lone Star College                | San Jacinto College     | Wharton County Junior College     |  |
| AA, Health and Wellness          | AA, General Studies     |                                   |  |

| PVAMU   | UH   | UH<br>Downtown                    | UH<br>Clear Lake   | TAMUV              | TSU                                   | TWU                                      |
|---|--|-----------------------------------|--|--------------------|---------------------------------------|--|
| BS, Health<br>BS, Health – Teaching Certification | BS, Health<br><br>Tracks:<br><ul style="list-style-type: none"> <li>• Health Promotion</li> <li>• Public Health</li> </ul> | BS, Health and Behavioral Science | BS, Kinesiology<br><br>Concentrations:<br><ul style="list-style-type: none"> <li>• Exercise Science</li> <li>• Public Health</li> <li>• Strength and Conditioning</li> </ul> | BS, Health Studies | BS, Health                            | BS Health Studies                        |
| BS/BA, Public Health                              |  |                                   |  |                    | BS, Health Administration             | BS Public Health                         |
| BS, Exercise Science                              |  |                                   |  |                    | BS, Health Information Management     | BS Kinesiology, (Exercise Science track) |
| BS, Kinesiology                                   |  |                                   |  |                    | BS, Respiratory Therapy               |  |
| BS, Nutrition and Dietetics                       |  |                                   |  |                    | BS, Environmental Health              |  |
|   |  |                                   |  |                    | BS, Clinical Laboratory Sciences      |  |
|   |  |                                   |  |                    | BS, Nutritional Science and Dietetics |  |

Courses in the following representative sequence apply to lower-level requirements in **Health and Wellness** degrees across Houston GPS institutions without resulting in excess credit upon transfer. Course numbers provided are those in the Texas Common Course Numbering System.

| <b>Year 1</b>  |   |
|--|---|
| PHED 1304 Personal/Community Health                  | PHED 1346 or SOCI 2340 Drug Use & Abuse             |
| BIOL 1322 Nutrition & Diet Therapy                   | MATH Core (020)*                                    |
| ENGL 1301 Composition I (010)*                       | ENGL 1302 Composition II (010)*                     |
| HIST 1301 United States History I (060)*             | HIST 1302 United States History II (060)*           |
| GOVT 2305 Federal Government (070)*                  | GOVT 2306 Texas Government (070)*                   |
| <b>Year 2</b>  |   |
| BIOL 2401 or BIOL 2301/2101 Anatomy & Physiology I** | BIOL 2402 or BIOL 2302/2102 Anatomy & Physiology II |
| PSYC 2301 General Psychology                         | Language, Philosophy, and Culture Core (040)*       |
| MATH 1314 OR MATH Core (020)                         | Creative Arts Core (050)*                           |
| Social and Behavioral Sciences Core (080)*           | Component Area Option Core (090)*                   |
| Life and Physical Sciences Core (030)*               | Life and Physical Sciences Core (030)*              |

\* Core Curriculum

Notes Regarding Institutional Exceptions or Special Cases:

UH: Anatomy & Physiology I and II courses will transfer in as the Life and Physical Sciences Approved Core as long as it is designated as Core at the articulating community college. Otherwise, it counts as elective credit. BIOL 1322 Nutrition and Diet Therapy course will also transfer as a life and science core course and/or elective. PHED 1304 transfers as HLT 1353 (Personal Health) or as an elective. PHED 1346 transfers as an elective (major or general). PHED 1306 will be acceptable towards Health (for both tracks).

UHCL: Recommend students take Anatomy & Physiology I and II, however will accept Life and Physical Sciences Approved Core as long as it is designated as Core at the articulating community college. Recommend students take PSYC 2301 for Social and Behavioral Science but will accept any Social and Behavioral Science. Recommend students take MATH 1314 but will accept any MATH Core 020. PHED 1304, 1346, and BIOL 1322, MATH 2305 will count towards 25 SCH of general electives. PHED 1301 and 1306 will transfer as part of the major.

TSU: SOCI 2340 transfers as a general elective.

UHD: MATH 1314 is required. Recommend students take Anatomy & Physiology I and II, however will accept Life and Physical Sciences Approved Core as long as it is designated as Core at the articulating community college. Recommend students take PSYC 2301 for Social and Behavioral Science but will accept any Social and Behavioral Science.

PVAMU: BIOL 1322 does not transfer as part of the major. PHED 1346 or SOCI 2340 transfer as general electives.

TWU: BS Health Studies: Anatomy & Physiology I and II, and BIOL 1322 courses will transfer as the Life and Physical Sciences Approved Core as long as it is designated as Core at community college. PHED 1304 transfers as HS 1902/1901. Math: recommend students take MATH 1342 as MATH 1342 is a required course for degree plan. PHED 1346 will count towards an elective. MATH 2305 will not transfer.

BS Public Health: Anatomy & Physiology I and II courses will transfer in as the Life and Physical Sciences Approved Core as long as it is designated as Core at community college. Otherwise recommend the following for the Life and Physical Science (30) core: CHEM 1305/1105 Intro to Chem OR CHEM 1311/1111 General Chemistry, BIOL 2420 Microbiology for non-science majors. PHED 1304 transfers as HS 1902/1901 will count towards guided elective Math: recommend students take MATH 1342, it is a required course for degree plan. PHED 1346 will count towards a guided elective. MATH 2305 will not transfer. Recommend students take one of the following courses that are required for degree plan: PSYC 2314 Lifespan Growth & Development OR PSYC 2320 Abnormal Psychology.

BS Kinesiology (Exercise Science): Anatomy & Physiology I and II courses will transfer in as the Life and Physical Sciences Approved Core as long as it is designated as Core at community college. Otherwise recommend the following for the Life and Physical Science (30) core: CHEM 1305/1105 Intro to Chem OR CHEM 1311/1111 General Chemistry, PHYS 1401 or 1301/1101 College Physics I. PHED 1304 will count as an elective. Math: recommend students take MATH 1342, it is a required course for degree plan. PHED 1346 will count towards an elective. MATH 2305 will count towards an elective.

Mathematics

The Mathematics Map for Houston GPS includes the following majors at participating institutions:

| Alvin College     | College of the Mainland | Galveston College             | Houston City College |
|-------------------|-------------------------|-------------------------------|----------------------|
| AS, Mathematics   | AS, Math                | AS, Mathematics               | AS, Mathematics      |
| Lone Star College | San Jacinto College     | Wharton County Junior College |                      |
|                   | AS, Mathematics         | AA, Mathematics               |                      |

| PVAMU                                   | UH  | UH<br>Downtown   | UH<br>Clear Lake   | TAMUV                     | TSU  | TWU |
|---|---|--|--|---------------------------|--|-----|
| BS, Mathematics                         | BA, Mathematics                                 | BA, Mathematics  | BA, Mathematical Science                                 | BA, Mathematical Sciences | BS, Mathematics                                      |     |
| Bs, Mathematics – Teacher Certification | BS, Mathematics                                 | BS, Mathematics  | BS, Mathematical Science                                 | BS, Mathematical Sciences | BS, Mathematics with a concentration in Data Science |     |
|   | BS, Mathematics—<br>Mathematical Finance Option | BA, Mathematics with<br>Secondary Mathematics<br>Teacher Certification | Mathematical Science<br>BA with 4-8<br>Certification     |                           |  |     |
|   | BA, Mathematics—<br>Teach Houston<br>Option     | BS, Applied Statistics<br><br>BS, Data Science                         | Mathematical Science<br>BA/BS with 7-12<br>Certification |                           |  |     |
|   | BS, Mathematics—<br>Teach Houston<br>Option     | BS, Applied Statistics<br>with concentration in<br>Biostatistics       |  |                           |  |     |
|   | BS, Mathematics—<br>Data Science Option         | BS, Applied Statistics<br>with Secondary Teacher<br>Certification      |  |                           |  |     |

Courses in the following representative sequence apply to lower-level requirements in **Mathematics** degrees across Houston GPS institutions without resulting in excess credit upon transfer. Course numbers provided are those in the Texas Common Course Numbering System.

| <b>Year 1</b>                                 |  |
|---|--|
| MATH 2413 Calculus I                          | MATH 2414 Calculus II  |
| Language, Philosophy, and Culture Core (040)* | PHYS 2425 University Physics I plus lab or<br>PHYS 2325/PHYS 2125 University Physics I plus lab  |
| ENGL 1301 Composition I (010)*                | ENGL 1302 Composition II (010)*  |
| HIST 1301 United States History I (060)*      | HIST 1302 United States History II (060)*  |
| Social and Behavioral Sciences Core (080)*    |  |
| <b>Year 2</b>                                 |  |
| MATH 2415 Calculus III                        | MATH 2320 Differential Equations   |
| MATH 2318 Linear Algebra                      | <p><i>One of the following</i></p> <p>ENGR 2304 Programming for Engineers<br/>           COSC 1336 Programming Fundamentals I (3 SHC version)<br/>           COSC 1436 Programming Fundamentals I (4 SCH version)<br/> <i>or a course that includes Programming Fundamentals I as a prerequisite:</i></p> <ul style="list-style-type: none"> <li>• COSC 1337 Programming Fundamentals II (3 SCH version)</li> <li>• COSC 1437 Programming Fundamentals II (4 SCH version)</li> <li>• COSC 2336 Programming Fundamentals III (3 SCH version)</li> <li>• COSC 2436 Programming Fundamentals III (4 SCH version)</li> <li>• COSC 2325 Computer Organization (3 SCH version)</li> <li>• COSC 2425 Computer Organization (4 SCH version)</li> </ul> |
| GOVT 2305 Federal Government (070)*           | GOVT 2306 Texas Government (070)*  |
| Life and Physical Science Core(030)*          | Component Area Option (090)* or elective   |
| Component Area Option (090)* or elective      | Creative Arts Core (050)*  |

\* Core Curriculum

\*\*If a student takes Linear Algebra at the 2000 level, you would need a transfer rule to accept a 2000 level at the 3000 level and it may impact a student's ability to reach the minimum number of advanced electives required.

Notes Regarding Institutional Exceptions or Special Cases:

UH: Only the BS, Mathematics—Data Science subplan has a programming fundamentals requirement (COSC 1336). All mathematics majors at UH (excluding Mathematical Biology majors) must take MATH 2131 (Linear Algebra Labs with MATLAB) which covers basic elements of programming using MATLAB. Students pursuing a Mathematics degree other than the BS Mathematics-Data Science subplan may still apply programming fundamentals credit toward free electives for their degree.

Students in the Math BA or Math BA Teach Houston program must take CHEM1311 to receive credit for CHEM1312 if CHEM1312 is selected to meet the Core Life and Physical Science Requirements.

TAMUV: Does not offer University Physics, instead offers College Physics. Linear Algebra is a 3,000-level course\*

PVAMU: Linear Algebra is a 3,000-level course\*

Physics

The Physics Map for Houston GPS includes the following majors at participating institutions:

| <b>Alvin College</b>     | <b>College of the Mainland</b> | <b>Galveston College</b>   | <b>Houston City College</b>          |
|--------------------------|--------------------------------|----------------------------|--------------------------------------|
| AS, Physical Science     | AS, Natural Science            | AS, Physics                | AS, Physics                          |
| <b>Lone Star College</b> |                                | <b>San Jacinto College</b> | <b>Wharton County Junior College</b> |
|                          | AS, Natural Science            | AS, Physics                |                                      |

| <b>PVAMU</b> | <b>UH</b>   | <b>UH<br/>Downtown</b> | <b>UH<br/>Clear Lake</b> | <b>TAMUV</b> | <b>TSU</b>  |
|--------------|-------------|------------------------|--------------------------|--------------|-------------|
| BS, Physics  | BA, Physics |                        | BS, Physics              |              | BS, Physics |
|              | BS, Physics |                        |                          |              |             |

Courses in the following representative sequence apply to lower-level requirements in **Physics** degrees across Houston GPS institutions without resulting in excess credit upon transfer. Course numbers provided are those in the Texas Common Course Numbering System.

| <b>Year 1</b>   |   |
|---|---|
| CHEM 1411 General Chemistry I or<br>CHEM 1311/1111 General Chemistry with Lab I*                  | CHEM 1412 General Chemistry with Lab II or<br>CHEM 1312/1112 General Chemistry with Lab II*     |
| MATH 2413 Calculus I (030)*   | MATH 2414 Calculus II   |
| Social and Behavioral Sciences Core (080)*  | PHYS 2425 University Physics I plus lab or<br>PHYS 2325/PHYS 2125 University Physics I plus lab |
| ENGL 1301 Composition I (010)*  | ENGL 1302 Composition II (010)*   |
| Creative Arts Core (050)*   |   |
| <b>Year 2</b>   |   |
| PHYS 2426 University Physics II plus lab or<br>PHYS 2326/PHYS 2126 University Physics II plus lab | MATH 2318 Linear Algebra  |
| MATH 2415 Calculus III  | Language, Philosophy, and Culture Core (040)*   |
| HIST 1301 United States History I (060)*  | HIST 1302 United States History II (060)*   |
| Remaining Core Curriculum Requirement   | Remaining Core Curriculum Requirement   |
|   |   |

\* Core Curriculum

Notes Regarding Institutional Exceptions or Special Cases:

AC: AS, Physical Science does not offer math beyond Calculus I

UH: CHEM1311/1111 and CHEM 1312/1112 fulfill core Life and Physical Science (030), MATH 2413 fulfills core Mathematics (020), and MATH 2414 fulfills core Math Reasoning (090). -The pre-requisite for entry into MATH 2413 at UH is credit for MATH 2312 with a grade of C- or higher or a satisfactory score on a math placement exam. The pre-requisite for entry into CHEM1311 at UH is MATH 2312 or equivalent.

UHCL: MATH 2318 is incorporated into PHYS 3311 Math Methods I. It will not be accepted as a standalone equivalent. If taken with MATH 2320, it can be considered for equivalency for PHYS 3311 with program chair approval.

TSU: Math 2320 Differential Equations can be taken instead of MATH 2318 Linear Algebra