

**Four Year Graduation Plan – Courses & Critical Benchmarks:**

The following is a sample course of study. It is the Student's responsibility to ensure that all program requirements are met. This guide is not a substitute for academic advisement. For more information see the University Catalog at [umkc.edu/catalog](http://umkc.edu/catalog).

Your path to graduation may vary based on factors such as college credit you earned while in high school, transfer work from other institutions of higher learning, and placement in Mathematics. You are responsible for checking prerequisites to any courses. Critical Courses and minimum recommended grades (as noted below) provide feedback regarding major fit and help indicate likelihood of successful completion of chosen academic program and degree.

**Please Note:** Students who do not place into MATH 120 Pre-Calculus or higher may have to complete preparatory math coursework, potentially adding 3 hours to the total hours required for the degree.

|                           |                       |                                      |    |                                |    |
|---------------------------|-----------------------|--------------------------------------|----|--------------------------------|----|
| <b>First Math Course:</b> | MATH 120 Pre-Calculus | <b>Foreign Language Requirement:</b> | No | <b>General Elective Hours:</b> | 10 |
|---------------------------|-----------------------|--------------------------------------|----|--------------------------------|----|

| Critical Course  | Course Subject, Number, & Title and Academic Plan Benchmarks<br><b>Bold = UMKC General Education Core requirement</b><br>** Co-Requisite Enrollment Required                                     | Min. Rec. Grade | Credit Hours | Notes   |
|--|--|-----------------|--------------|---|
| <b>Fall Semester Year 1: 15-18 hours</b>   |  |                 |              |   |
| ◆  | MATH 120 Pre-Calculus <sup>1</sup> ( <b>Focus B</b> ) OR<br>MATH 125 Trigonometry <sup>1</sup> (if MATH 110 College Algebra completed) OR<br>MATH 210 Calculus I <sup>1</sup> ( <b>Focus B</b> ) | B               | 2-5          | <sup>1</sup> Enrollment restricted. Must take <a href="#">ALEKS Math Placement Exam</a> or show prerequisite requirement has been met prior to enrolling.   |
|  | COMP-SCI 101 Problem Solving & Programming I   |                 | 3            |   |
|  | <b>**Anchor I Reasoning &amp; Values</b> <a href="#">Click for options</a>   |                 | 3            |   |
|  | <b>**DISC 100 Reasoning &amp; Values</b> (Speech & Writing) <a href="#">Click for options</a>  |                 | 3            |   |
|  | <b>Focus A Arts &amp; Humanities</b> <a href="#">Click for options</a>   |                 | 3            |   |
|  | General Elective   |                 | 1            |   |
| Complete 15+ credit hours toward degree<br>Earn minimum 2.00 term GPA  |  |                 |              |   |
| <b>Spring Semester Year 1: 15 hours</b>  |  |                 |              |   |
| ◆  | MATH 210 Calculus I ( <b>Focus B</b> ) OR<br>MATH 220 Calculus II  | B               | 4            | Register for <a href="#">UMKC Roo Career Network</a> .<br><br><sup>2</sup> HISTORY 101, 102, & POL-SCI 210 fulfill both the <b>Focus Elective</b> & <a href="#">Missouri Constitution requirement</a> . |
| ◆  | PHYSICS 240 Physics for Scientists & Engineers I ( <b>Focus Elective</b> )   | B               | 5            |   |
|  | ASTR 150 Motions of the Cosmos (even years) OR<br>ASTR 155 Starlight & Star Stuff (odd years)  |                 | 3            |   |
|  | <b>Focus C Human Values &amp; Ethical Reasoning</b> <a href="#">Click for options</a><br>Recommend HISTORY 101, 102, or POL-SCI 210 <sup>2</sup>   |                 | 3            |   |
| Complete 15 credit hours toward degree<br>Earn minimum 2.00 term GPA   |  |                 |              |   |
| <b>Summer Semester Year 1</b>  |  |                 |              |   |
| ◆  | Math 220 Calculus II (if not already completed)  | B               | 4            | Recommend completing MATH 220 over the summer if tested into MATH 120 or 125.   |
| Complete Math Requirement<br>Complete Anchor I & DISC 100<br>Complete at least 30 total credit hours toward degree<br>Maintain a minimum 2.00 cumulative GPA |  |                 |              |   |
| <b>Fall Semester Year 2: 15 hours</b>  |  |                 |              |   |

|   |   |   |   |   |
|---|---|---|---|---|
| ◆   | MATH 250 Calculus III   | B | 4 | Take the <a href="#">RooWriter Assessment</a> after completing DISC 200. Must complete prior to enrolling in a Writing Intensive (WI) course. |
| ◆   | PHYSICS 250 Physics for Scientists & Engineers II   | B | 5 |   |
|   | **Anchor II Culture & Diversity <a href="#">Click for options</a>   | B | 3 |   |
|   | **DISC 200 Culture & Diversity (Speech & Writing) <a href="#">Click for options</a>   |   | 3 |   |
| Complete 15 credit hours toward degree<br>Earn minimum 2.00 term GPA  |   |   |   |   |
| <b>Spring Semester Year 2: 15 hours</b>   |   |   |   |   |
| ◆   | PHYSICS 350 Modern Physics  | B | 3 |   |
| ◆   | CHEM 211 + 211L General Chemistry I with Lab  | B | 5 |   |
|   | ASTR 353 Practical Astronomy (even years) OR<br>PHYSICS 410 Thermal Physics (odd years)   |   | 3 |   |
|   | ASTR 150 Motions of the Cosmos (even years) OR<br>ASTR 155 Starlight & Star Stuff (odd years)   |   | 3 |   |
| Complete 16 credit hours toward degree<br>Earn minimum 2.00 term GPA  |   |   |   |   |
| <b>Summer Semester Year 2: 0 hours</b>  |   |   |   |   |
| Complete Anchor II & DISC 200<br>Complete RooWriter Assessment<br>Complete at least 60 credit hours toward degree<br>Maintain minimum 2.00 cumulative GPA |   |   |   | Students may use the summer to ensure completion of 30 hours per academic year or to lighten fall and spring course loads.                    |
| <b>Fall Semester Year 3: 15 hours</b>   |   |   |   |   |
|   | PHYSICS 310 Mechanics I   |   | 3 |   |
|   | PHYSICS 330 Methods of Theoretical Physics I  |   | 3 |   |
|   | ASTR 355 Stellar Astrophysics (even years) OR<br>ASTR 356 Galaxies (odd years)  |   | 3 |   |
|   | **Anchor III Civic & Community Engagement <a href="#">Click for options</a>   |   | 3 |   |
|   | **DISC 300 Civic & Community Engagement (Speech & Writing) <a href="#">Click for options</a>  |   | 3 |   |
| Complete 15 credit hours toward degree<br>Earn minimum 2.00 term GPA  |   |   |   |   |
| <b>Spring Semester Year 3: 15 hours</b>   |   |   |   |   |
|   | PHYSICS 311 Mechanics II  |   | 3 |   |
|   | ASTR 353 Practical Astronomy (even years) OR<br>PHYSICS 410 Thermal Physics (odd years)   |   | 3 |   |
|   | CAS Social & Behavioral Sciences Requirement <a href="#">Click for options</a><br>(Complete <a href="#">MO Constitution requirement</a> if not met above) |   | 3 |   |
|   | CAS Arts & Humanities Requirement <a href="#">Click for options</a>   |   | 3 |   |
|   | General Elective<br>(PHYSICS 499 Undergraduate Research recommended)  |   | 3 |   |
| Complete 15 credit hours toward degree<br>Earn minimum 2.00 term GPA  |   |   |   |   |
| <b>Summer Semester Year 3: 0-3 hours</b>  |   |   |   |   |
|   | Recommend Summer Research Project/Internship or PHYSICS 499   |   | 3 | Students may use the summer to ensure completion of 30 hours per academic year or to lighten fall and spring course loads.                    |
| Complete Anchor III & DISC 300<br>Complete at least 90 credit hours towards degree<br>Maintain minimum 2.00 cumulative GPA                                |   |   |   |   |
| <b>Fall Semester Year 4: 15 hours</b>   |   |   |   |   |

|  |  |  |     |   |
|--|--|--|-----|---|
|  | ASTR 355 Stellar Astrophysics (even years) OR<br>ASTR 356 Galaxies (odd years)   |  | 3   | <a href="#">Apply for graduation</a> & complete your Final Degree Audit for Major and Minor (if applicable).<br><br>Take the <a href="#">ETS Proficiency Profile (EPP)</a> exit exam. |
|  | PHYSICS 460 Electricity & Magnetism I  |  | 3   |   |
|  | PHYSICS 472 Introduction to Quantum Mechanics  |  | 3   |   |
|  | PHYSICS 476LW Advanced Lab Writing Intensive (odd years) OR<br>PHYSICS 395L Computer Interfacing Laboratory (even years) |  | 3   |   |
|  | CAS Social & Behavioral Sciences Requirement <a href="#">Click for options</a>   |  | 3   |   |
| Complete 15 credit hours toward degree<br>Earn minimum 2.00 term GPA |  |  |     |   |
| <b>Spring Semester Year 4: 12-15 hours</b>                           |  |  |     |   |
|  | ASTR 465 Cosmology (odd years) OR<br>PHYSICS 410 Thermal Physics (even years)  |  | 3   | Take <a href="#">Major Field (MF)</a> exit exam.  |
|  | PHYSICS 461 Electricity & Magnetism II   |  | 3   |   |
|  | CAS Arts & Humanities Requirement <a href="#">Click for options</a>  |  | 3   |   |
|  | General Elective   |  | 3   |   |
|  | General Elective (if needed to reach 120 hours)  |  | 0-3 |   |
| Earn minimum 2.00 term GPA   |  |  |     |   |

### Graduation Requirements Summary

| Total Hours | Total Hours at UMKC | Upper Lvl Hrs in Major at UMKC | Upper (300 / 400) Level Hours | Major GPA    | UMKC GPA     |
|-------------|---------------------|--------------------------------|-------------------------------|--------------|--------------|
| 120 minimum | 30 minimum          | 12 minimum                     | 36 minimum                    | 2.00 minimum | 2.00 minimum |

### Other Information

A minimum of 30 hours must be earned at the University of Missouri-Kansas City, regardless of the number and level of hours earned at another institution. Undergraduate degree-seeking students are required to earn credit in at least 36 hours of coursework numbered 300 and above at UMKC. In the case of transfer credit, the coursework must be numbered as junior-senior level work by the transferring institution. Community-college transfer coursework cannot count towards the 36-hour requirement.

### Non-course Requirements

RooWriter Assessment \_\_\_\_\_  
Major Field Exam \_\_\_\_\_  
ETS Proficiency Profile \_\_\_\_\_

### Policy

The University reserves the right to make changes in courses and course schedules. Students are expected to maintain a quality of achievement significantly above minimum UMKC standards for degree work. Individual student progress will be monitored throughout the program. Satisfactory progress is required of all students for retention in the program. Students are expected to maintain academic standards, perform satisfactorily in courses, refrain from academic dishonesty, comply with the established University requirements, and refrain from unethical or unprofessional behavior or behaviors that obstruct the training process or threaten the welfare of the student or others. Other circumstances involving student behavior will be addressed by the faculty on an individual basis.

### Advising Contact Information

College of Arts & Sciences Student Services  
09 Scofield Hall (basement)  
<http://cas.umkc.edu/advising/default.asp>  
816-235-1148

### Career Opportunities

UMKC Career Services – [career.umkc.edu](http://career.umkc.edu) | 816-235-1636 | 2<sup>nd</sup> Floor, Atterbury Student Success Center  
O\*Net OnLine – [OnetOnline.org](http://OnetOnline.org) Enter the Classification of Instructional Programs (CIP) number of your major to learn about related careers.  
Major CIP: 400801