BACHELOR OF ARTS: PHYSICS

University Requirements

General Education

UMKC Essentials is the university-wide curriculum that all undergraduate students will complete. The 30-credit hour program includes a First Year Experience course; three critical thinking courses in the areas of Arts & Humanities, Natural & Physical Sciences, and Social & Behavioral Sciences; a course in Culture and Diverse Perspectives; a course in Civic & Urban Engagement; two courses in Written Composition and one course in Oral Communication; and a Math Pathway course. Transfer students entering UMKC will elect from the UMKC Essentials General Education Program or the Missouri Core 42 General Education Curriculum. Academic advisors will meet with incoming transfer students to determine which option best serves the student's educational needs. More information about General Education may be found on the General Education Requirements (https:// catalog.umkc.edu/undergraduate-academic-regulations-information/general-education-requirements/) page.

Constitution Course

Every undergraduate student must take a course covering the United States Constitution and the Missouri State Constitution before graduation. Course options are included in the program requirements section below.

Exit Examinations

Information on exit examinations is available in the Undergraduate Academic Regulations and Information (https://catalog.umkc.edu/undergraduateacademic-regulations-information/graduation/exitexams/) section of the catalog.

Missouri Higher Education Civics Achievement Examination

In accordance with Missouri Senate Bill 807 (section 170.013.1), 'any student entering a public institution of higher education for the first time after July 2019 who is pursuing an associate's or bachelor's degree from such institution shall successfully pass an examination on the provisions and principles of American civics with a score of seventy percent or greater as a condition of graduation from such institution'. To satisfy this requirement at UMKC, students access the exam through the Canvas site. This requirement will be listed in the degree audit system as, 'Take State Mandated Missouri Higher Education Civics Achievement Examination', and listed on the transcript as 'Missouri Civics Examination'.

Student Learning Outcomes

Students graduating from this program will:

- Have a functional knowledge of the basic areas of physics.
- · Be able to integrate their knowledge with critical thinking skills in order to become quantitative problem solvers.
- · Be able to clearly articulate scientific information, both orally and in writing.
- · Be able to effectively use the scientific literature.

Description of the Bachelor of Arts Program

The Bachelor of Arts (BA) degree in Physics is recommended for students interested in seeking employment in science, technology, engineering and math (STEM) areas that require a strong scientific and quantitative background. The BA degree offers greater flexibility than either the Physics BS or the Physics/Engineering Double Degree program because it requires fewer credit hours of physics in contrast to the BS.

Physics advising questions should be directed to Professor Elizabeth Stoddard (stoddarde@umkc.edu).

Students graduating with a BA degree in Physics will be prepared for entry into the high-tech job market.

Program Requirements

Code	Title	Credits
First Semester Experience Co	urse (GEFSE)	3
Written Communication:		
ENGLISH 110	Introduction to Academic Prose	3
ENGLISH 225	English II: Intermediate Academic Prose	3
Oral Communication (choose	3	
COMM-ST 110	Fundamentals of Effective Speaking and Listening	
COMM-ST 140	Introduction to Communication	
COMM-ST 212	Argumentation And Debate (offered via dual credit only)	
COMM-ST 277	Interpersonal Communication	

Math Pathway (satisfied in major requirements below)	
Critical Thinking in Arts & Humanities (GECRT-AH)	3
Critical Thinking in Natural & Physical Sciences (GECRT-SC)	3
Critical Thinking in Social & Behavioral Sciences (GECRT-SS)	3
Culture & Diverse Perspectives (GECDV)	3
Civic & Urban Engagement (GECUE)	3
Total Credits	27

Constitution Course Requirement

Section 170.011.1 of the Missouri Revised Statutes, 2015, states that all candidates for a degree issued by a college or university in the state of Missouri must have "satisfactorily passed an examination on the provisions and principles of the Constitution of the United States and of the state of Missouri, and in American history and American institutions."

Courses at UMKC that satisfy this state requirement are:

Code	Title	Credits
Choose one of the following:		3
CJC 364	The Supreme Court And The Criminal Process	
HISTORY 101	U.S. History to 1877	
HISTORY 102	U.S. History Since 1877	
HONORS 230	Honors American Government	
POL-SCI 210	American Government	
Total Credits		3

Total Credits

There are a few other ways this requirement can be satisfied for students transferring to UMKC:

- Take an equivalent course from the list above at a regionally accredited institution.
- · Earn credit for one of the above courses through AP, IB, or CLEP.
- · Take a course that directly satisfies the Missouri Constitution Requirement at another Missouri institution.
- · Have a previous bachelor's degree (or higher) from a regionally accredited institution.
- · Have an Associate of Arts degree from a regionally accredited institution.
- · Complete the 42 Hour Core at a Missouri institution and have it listed on the official transcript.

Major Requirements

Students must successfully complete the major requirements below with at least 12 hours of the noted upper division (300+) course requirements completed at UMKC.

Students must complete 31 hours of Physics coursework, of which 21 hours must be at the 300-level or above.

Code	Title	Credits
MATH 120	Precalculus (satisfies Math Pathway)	5
MATH 210	Calculus I	4
MATH 220	Calculus II	4
MATH 250	Calculus III	4
CHEM 211	General Chemistry I	5
& 211L	and Experimental General Chemistry I	
Choose One Introductory Series		8
PHYSICS 210 & PHYSICS 220	General Physics I and General Physics II	
PHYSICS 240 & PHYSICS 250	Physics For Scientists and Engineers I and Physics For Scientists and Engineers II	
Required Upper Division Theory Cou	irses	12
PHYSICS 310	Mechanics I	
PHYSICS 330	Methods Of Theoretical Physics I	
PHYSICS 350	Modern Physics With Engineering Applications	
PHYSICS 472	Introduction To Quantum Mechanics	

E2
8
3

Total Credits

General Electives

Students must take elective credit hours to meet the minimum credit hour requirement for their degree, including at least 36 credit hours of coursework at the 300-level or above. The minimum required by the university is 120 credit hours, of which at least 30 credit hours must be taken at UMKC, but some degree programs require more.

Code

General Electives

Major Minimum GPA: 2.0

Minimum GPA: 2.0

Total Credit Hours: 120

Tools for Planning and Fulfilling Academic Requirements

Title

UMKC's Major Maps are detailed, semester by semester plans that lead a student to complete all degree requirements within four years. Plans include benchmarks and critical courses by term that assist a student's evaluation of progress and major "fit". In order to ensure that the appropriate courses are taken, students are encouraged to consult with the undergraduate advisor for this major. Please see the tab above to view the major map for this program.

UMKC's Transfer Guides (https://www.umkc.edu/transfer/transfer-credit/transfer-guides.html) provide detailed guidance on recommended transfer coursework, plans of study, transfer timelines, and transfer contact information. To ensure a seamless transfer experience, students are encouraged to work with both their community college advisor and a UMKC advisor when planning their coursework.

UMKC's PlanMyDegree 'Audit' (https://www.umkc.edu/registrar/academic-programs/plan-my-degree.html) degree audit system provides an individual evaluation of all degree requirements (General Education, Degree Specific, Major Specific, etc.) for students' officially recorded (Office of the Registrar) and "what if" exploratory plans of study. This evaluation is used to certify all graduation requirements.

UMKC's PlanMyDegree 'Plans' (https://www.umkc.edu/registrar/academic-programs/plan-my-degree.html) degree planning tool enables students to develop a personalized semester by semester plan of study towards completion of degree requirements for student's officially recorded (Office of the Registrar) and "what if" exploratory plans of study. Update and edit your full plan to degree completion each term and confirm accuracy each semester with your Academic Advisor(s).

53

Credits 37

Major Map Four Year Graduation Plan - Courses & Critical Benchmarks for First Time College Students:

UMKC's Major Maps are detailed, undergraduate four-year course outlines that inform students on the classes they should take and when to take them. Outlines are updated yearly. Graduate students should visit their program's individual school for program outlines.

The following is a sample course of study. 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. It is the Student's responsibility to ensure that all program requirements are met. This guide is not a substitute for academic advisement.

Credits	Spring Semester	Credits
4	MATH 220 ^{CC}	
3	PHYSICS 240 ^{CC}	!
3	ENGLISH 225	:
3	General Elective	:
3		
16		1
Credits	Spring Semester	Credits
4	PHYSICS 385L or 476LW	:
5	COMM-ST 110 or 277	:
4	GECRT-AH 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 112, 113, or 114	:
1	GECRT-SS 101, 102, 104, 105, 106, 107, 108, or 111	:
3	HISTORY 101, 102, or POL-SCI 210	:
17		19
Credits	Spring Semester	Credits
3	PHYSICS 350	:
3	PHYSICS 3XX/4XX Major Elective (420 recommended)	:
3	GECDV 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, or 211	:
3	3XX/4XX General Elective	:
3	General Elective	5
3		:
15 Credits		1!
15 Credits 3	Spring Semester	1! Credits
15 Credits 3 3	Spring Semester PHYSICS 3XX/4XX Major Elective 3XX/4XX General Elective (WI Writing Intensive course if not yet	1! Credits
	4 3 3 3 3 16 Credits 4 1 3 17 Credits 3 3 3	4 MATH 220 ^{CC} 3 PHYSICS 240 ^{CC} 3 ENGLISH 225 3 General Elective 3 16 Credits Spring Semester 4 PHYSICS 385L or 476LW 5 COMM-ST 110 or 277 4 GECRT-AH 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 112, 113, or 114 1 GECRT-SS 101, 102, 104, 105, 106, 107, 108, or 111 3 HISTORY 101, 102, or POL-SCI 210 17 Credits Spring Semester 3 PHYSICS 350 3 PHYSICS 350 3 PHYSICS 350, 204, 205, 206, 206, 206, 200, 201, 202, 203, 204, 205, 206, 200, 201, 202, 203, 204, 205, 206, 200, 201, 202, 203, 204, 205, 206, 200, 200, 201, 202, 203, 204, 205, 206, 200, 200, 201, 202, 203, 204, 205, 206, 200, 200, 200, 200, 200, 200, 200

General Elective	3	
	15	12

Total Credits: 120

CC Critical Courses provide feedback regarding major fit and help indicate likelihood of successful completion of chosen academic program and degree.

Recommendations to Maintain Progress toward 4-Year Degree Completion

- · Completion of the First Semester Experience (FSE) course in first term.
- · Early completion of Written Communication, Oral Communication, and Math Pathway requirements.
- · Maintain the minimum GPA required for academic Good Standing for your degree program.
- Completion at least 15 credit hours toward degree each regular semester. (Students may use the summer to ensure completion of 30 hours per academic year or to lighten Fall and Spring course loads.)
- Enrollment in Critical Courses as listed on the Major Map is recommended in order to maintain timely progress and completion of prerequisite coursework.
- Early and continuous enrollment in Foreign Language through completion of level required for degree program is recommended. (The Foreign Language placement exam is highly recommended to ensure placement in the correct course level.)
- · Regular consultation with Academic Advisor(s) for program(s) of study is strongly recommended and may be required for some degree programs..

Roo Advising (https://catalog.umkc.edu/roo-advising/)

Email: rooadvising@umkc.edu

Phone: 816-235-1148

Milestones Year 1

Fall Semester	Spring Semester
Login to (https://planmydegree.umkc.edu/selfserviceK/general/ home.html) PlanMyDegree :	Login to (https://planmydegree.umkc.edu/selfserviceK/general/ home.html) PlanMyDegree :
Review your degree audit in PlanMyDegree	Review your degree audit in PlanMyDegree
Create an academic plan for the Spring semester in PlanMyDegree	Create an academic plan for Year 2 in PlanMyDegree
Schedule appointment with Academic Advisor to review Academic Plan and obtain Spring semester approval to (https:// umkc.starfishsolutions.com/starfish-ops/support/login.html) release advising hold.	Schedule appointment with Academic Advisor to review Academic Plan and Year 2 approval to (https://umkc.starfishsolutions.com/starfish-ops/ support/login.html) release advising hold .
Complete the (https://catalog.umkc.edu/undergraduate-academic- regulations-information/graduation/civics-exam/) Missouri Higher Education Civics Achievement Exam.	Visit a faculty member during office hours/student drop-in hours to discuss their research.
Activate your (https://www.umkc.edu/career-services/students/ handshake.html) Handshake account and take a look at on-campus positions.	Attend a (https://app.joinhandshake.com/edu/appointments/ new/) Resume Workshop, Resume Blitz , or have a Resume Appointment with Career Services.
Take one of the following (https://www.umkc.edu/career-services/ students/online-resources.html)assessments to get a better understanding of yourself: Clifton Strengths, Focus2, or Agile Work Profiler.	Attend an (https://www.umkc.edu/career-services/events/) Employer Information Session or Networking in the 816 event.
Attend the (https://www.umkc.edu/career-services/events/) Fall Jobs & Internship Fair or the STEM Fair to understand who is recruiting UMKC students.	Schedule a (https://umkc.joinhandshake.com/stu/appointments/ new/) Choosing a Career Path / College Major appointment with a career coach to reflect on your major and see that it is in-line with career paths you are interested in.
Attend (https://www.umkc.edu/get-involved/events/ convocation.html) Convocation and Roo Welcome Events .	Attend events and explore (https://roogroups.umkc.edu/ home_login/) RooGroups .
Join a (https://roogroups.umkc.edu/home_login/) student organization . (find them via RooGroups)	Attend (https://www.umkc.edu/get-involved/programs/) Leadership Workshops through the Office of Student Involvement.

Attend an **Undergraduate Research Symposium** (August-**SUROP** or November).

Investigate on-campus (https://www.umkc.edu/undergraduate-research/ student-resources/more-research-opportunities.html)**Undergraduate Research employment opportunities** (work-study funded UR Associates or grant-funded).

Join a **journal club** or **research-focused student group**, if offered in your dept/unit.

Connect with (https://www.umkc.edu/msa/scholar-programs/)**Emerging Research Scholars** in Multicultural Student Affairs (MSA).

Thinking Ahead

Explore summer enrollment to get caught up or get ahead.

Explore study abroad opportunities with the Study Abroad and Global Engagement Office. (https://www.umkc.edu/study-abroad (https://www.umkc.edu/study-abroad/)/)

Explore national competitive awards and scholarships. (https://www.umkc.edu/career-services/awards (https://www.umkc.edu/career-services/awards/)/)

Gain a general understanding of career outcomes for your chosen/desired majors.

Identify 2-3 career options.

Keep track of involvement using UMKC's Co-Curricular Transcript system. (https://www.umkc.edu/get-involved/programs/co-curricularengagement.html)

Year 2

Fall Semester	Spring Semester
Login to (https://planmydegree.umkc.edu/selfserviceK/general/ home.html) PlanMyDegree :	Login to (https://planmydegree.umkc.edu/selfserviceK/general/ home.html) PlanMyDegree :
Review your degree audit in PlanMyDegree	Review your degree audit in PlanMyDegree
Review and continue working on your academic plan in PlanMyDegree	Build out your academic plan through graduation in PlanMyDegree
Schedule appointment with Academic Advisor to review Academic Plan and obtain Spring semester approval to (https:// umkc.starfishsolutions.com/starfish-ops/support/login.html) release advising hold .	Schedule appointment with Academic Advisor to review Academic Plan and ensure all program requirements are planned and obtain plan approval to (https://umkc.starfishsolutions.com/starfish-ops/support/ login.html) release advising hold .
Attend the (https://www.umkc.edu/career-services/events/) Fall Jobs & Internship Fair or any career fair to identify internship opportunities / hiring windows.	Attend an (https://www.umkc.edu/career-services/events/) Employer Information Session or Networking in the 816 event.
Have an employer or Career Coach review your (https:// umkc.joinhandshake.com/stu/appointments/new/) resume .	Take part in a (https://www.umkc.edu/career-services/job- shadowing.html) job shadowing experience or a site visit .
Consider applying for an (https://app.joinhandshake.com/edu/postings/ pending/?page=1&per_page=25 OR https://www.umkc.edu/ research/) on/off-campus internship or research opportunity .	Attend any (https://umkc.joinhandshake.com/stu/events/? collection=ALL&categories=5&eventFormat=HYBRID&sort=REL fair.
Take on a (https://www.umkc.edu/get-involved/student- organizations/) Leadership role in a student organization or project team.	Connect with (https://www.umkc.edu/financial-wellness/) Financial Wellness Center and attend financial literacy workshops.
Attend an Undergraduate Research Symposium (August- SUROP or November).	Attend UMKC's Annual Undergraduate Research Symposium (April).
Enroll in a (https://www.umkc.edu/undergraduate-research/get- started/) EUReka class (UMKC Essentials or lower-level in your MAP).	Enroll in a (https://www.umkc.edu/undergraduate-research/get- started/) EUReka class (UMKC Essentials or lower-level in your MAP).
Investigate on-campus (https://www.umkc.edu/undergraduate-research/ student-resources/more-research-opportunities.html) Undergraduate Research employment opportunities (work-study funded UR Associates or grant-funded).	Develop a plan with your faculty research mentor for years three and four.
Meet with potential faculty research mentors in your major.	
Investigate off-campus (https://www.umkc.edu/undergraduate-research/	

Investigate off-campus (https://www.umkc.edu/undergraduate-research/ student-resources/more-research-opportunities.html)**Undergraduate Research** opportunities.

Attend UMKC's Annual Undergraduate Research Symposium (April).

Enroll in a (https://www.umkc.edu/undergraduate-research/getstarted/)**EUReka** class (UMKC Essentials or lower-level in your MAP).

Identify (https://net2.umkc.edu/intapps/ur-links/)**potential faculty mentors** in your major (UR-Linked or Dept/Unit Web sites).

Attend a research lecture or creative presentation in your major.

Thinking Ahead

Explore summer enrollment to get caught up or get ahead.

Explore study abroad opportunities with the Study Abroad and Global Engagement Office. (https://www.umkc.edu/study-abroad (https://www.umkc.edu/study-abroad/)/)

Explore national competitive awards and scholarships. (https://www.umkc.edu/career-services/awards (https://www.umkc.edu/career-services/awards/)/)

Identify three internships or research opportunities that match your major and career goals.

Year 3

Fall Semester	Spring Semester
Review your degree audit and academic plan in PlanMyDegree to ensure you are on track for anticipated graduation date.	Review your degree audit and academic plan in PlanMyDegree to ensure you are on track for anticipated graduation date.
Schedule an appointment or confirm enrollment plans as required with academic advisor to (https://umkc.starfishsolutions.com/starfish-ops/ support/login.html) release advising hold .	Schedule an appointment or confirm enrollment plans as required with academic advisor to (https://umkc.starfishsolutions.com/starfish-ops/ support/login.html) release advising hold .
	Submit (https://www.umkc.edu/registrar/academic-programs/ graduation/) application for graduation at the completion of 90 hours in Pathway.
Attend the (https://www.umkc.edu/career-services/events/) Fall Jobs & Internship Fair or any career fair to discuss internship opportunities with employers.	Meet with an employer for an informational interview. (https:// cdn.careers.bloch.umkc.edu/wp-content/uploads/sites/130/2021/08/ Bloch-Informational-Interviewing.pdf)
Attend a workshop or appointment about (https:// app.joinhandshake.com/edu/appointments/new/)Cover Letters and LinkedIn.	Attend a Networking workshop or a (https://www.umkc.edu/career- services/events/) Networking in the 816 event.
Apply to a minimum of 3 internships that are in-line with your major / career goals. (https://app.joinhandshake.com/edu/postings/pending/? page=1&per_page=25)	Attend any (https://umkc.joinhandshake.com/stu/events/? collection=ALL&categories=5&eventFormat=HYBRID&sort=RE fair.
Run for (https://www.umkc.edu/get-involved/student- organizations/) executive positions in student organizations.	Attend (https://sgs.umkc.edu/admissions/gradroo.html)Grad Roo Fair.
Apply for (https://www.umkc.edu/undergraduate-research/student- grants/) on/off-campus research opportunities , including SEARCH .	Apply for (https://www.umkc.edu/undergraduate-research/student- grants/) on/off-campus research opportunities , including SUROP .
	Enroll in upper-level (https://www.umkc.edu/undergraduate-research/get- started/) EUReka Course in your major (investigate senior thesis options in your major).
Conduct research with support of faculty mentor.	Conduct research with support of faculty mentor.
Present at UMKC's (https://www.umkc.edu/undergraduate-research/ presentations/) Fall Research Symposium .	Apply for (https://www.umkc.edu/undergraduate-research/ recognition/) Undergraduate Research Fellow transcript designation (March 1 deadline).
Investigate opportunities to present your research at regional or national conferences.	Present at UMKC's (https://www.umkc.edu/undergraduate-research/ presentations/) Annual Symposium of Undergrad Research in April.

Thinking Ahead

Explore summer enrollment to get caught up or get ahead.

Explore national competitive awards and scholarships. (https://www.umkc.edu/career-services/awards (https://www.umkc.edu/career-services/ awards/)/)

Establish one to two contacts in your desired industry.

Complete an internship / employment opportunity related to your major / career goals.

Year 4

Fall Semester

Review your degree audit and academic plan in **PlanMyDegree** to ensure all requirements are planned by anticipated graduation date.

Schedule an appointment or confirm enrollment plans as required with academic advisor to (https://umkc.starfishsolutions.com/starfish-ops/ support/login.html)**release advising hold**.

Spring Semester

Review your degree audit and academic plan in **PlanMyDegree** to ensure all requirements are planned by anticipated graduation date.

Take (https://net3.umkc.edu/intapps/exitexams/Home.aspx)**UMKC HEIghten Exam**.

Attend the (https://www.umkc.edu/career-services/events/) Fall Jobs & Internship Fair or the STEM fair to identify jobs to apply to.	Pay close attention to email for information about Graduation Fair and Commencement Exercises .	
Attend a workshop or appointment about Job Searching. (https:// app.joinhandshake.com/edu/appointments/new/)	Attend a Networking workshop or a (https://www.umkc.edu/career- services/events/) Networking in the 816 event.	
Have a (https://app.joinhandshake.com/edu/appointments/new/) mock interview appointment with a Career Coach.	Attend any (https://umkc.joinhandshake.com/stu/events/? collection=ALL&categories=5&eventFormat=HYBRID&sort=RELE fair.	EVANC
Serve on one or more student advisory boards.	Attend a (https://www.umkc.edu/commencement/)senior send-off and Commencement-related events.	
Apply for (https://www.umkc.edu/undergraduate-research/student- grants/) on/off-campus research opportunities , including SEARCH .	Apply to a minimum of 5 jobs or submit applications to professional / graduate programs as needed.	
Conduct research with support of faculty mentor.	Conduct research with support of faculty mentor.	
Request nomination for (https://www.umkc.edu/undergraduate-research/ presentations/undergraduate-research-day-at-the-capitol/) Undergraduate Research Day @ the Capitol (URD@C) from your faculty mentor (November 1 deadline).	Research (April) or at a regional or national conference in your discipline.	
Present Your Research at Fall UR Symposium or at a regional or national conference in your discipline. (https://www.umkc.edu/undergraduate-research/presentations (https://www.umkc.edu/undergraduate-research/presentations/)/)	In Canvas, complete all requirements in your Graduation Checklist (will appear in the second 8 weeks of the semester).	
Feature research accomplishments on résumé or grad/professional school applications.	Celebrate your awesomeness!	

Thinking Ahead

Successfully obtain full-time work or graduate school admission and report your outcome in 12Twenty. (https://www.umkc.edu/career-services/ students/12twenty.html)

Give back by speaking at student leadership panels or participating in alumni events.