JOHNSON COUNTY
COMMUNITY COLLEGE

# Division of Energy, Matter, and Systems

## University of Missouri - Kansas City

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|---|---|
| Johnson County Community College Transfer Program to the University of Missouri - Kansas City | School of Science & Engineering |
| School of Science and Engineering | 816-235-2399 |
| Division of Energy, Matter, and Systems | sse@umkc.edu |
| Academic Year 2025-2026 | https://sse.umkc.edu |

## Program Description

The Associate of Science, AS (https://catalog.jccc.edu/degreerequirements/associate-science/) at JCCC is a general transfer degree and partners well with the first two years of most bachelor degree programs. Students pursuing the AS may select courses that satisfy both the AS degree requirements and lower division requirements for a bachelor's degree at four-year institutions. The elective hours within the AS allow students to complete additional general education and lower division courses required for specific majors. The AS degree requires completion of 60 credit hours. Meeting with a JCCC counselor (https://www.jccc.edu/student-resources/counseling/academic-counseling/) is strongly recommended for selection of appropriate courses.

The Division of Energy, Matter, and Systems at UMKC offers the following degrees:

- Bachelor of Arts:
  - Chemistry
  - Physics
- Bachelor of Science
  - Electrical and Computer Engineering
  - Chemistry
  - Physics
  - Physics with Astronomy Emphasis
  - Mechanical Engineering

All UMKC undergraduate degrees require at least 120 credit hours, some programs may require more hours. Students must complete at least 30 credit hours at UMKC and at least 12 upper-division credit hours in their major department/program at UMKC to be eligible to receive an undergraduate degree from UMKC.

## General UMKC Transfer Admission Requirements

- 2.25 or higher cumulative GPA (Students between 2.0-2.24 will have the opportunity to petition. Please contact Nate Jacobs in UMKC Admissions for the full policy).
- Credit/no credit may only be applied to elective coursework and will not apply towards UMKC's general education core or major requirements.
- Equivalent courses can be repeated but all grades will be averaged for GPA calculation purposes and students will only receive credit for one attempt
- Visit the full transfer admission requirements (https://www.umkc.edu/transfer/apply.html) for more information.

**School of Science and Engineering Transfer Admission Requirements**

- Visit the School of Science & Engineering (https://sse.umkc.edu/admissions/transfer-students.html) admission requirements by major.

**General Education Requirements for Transfer students:**

All UMKC undergraduate students complete general education requirements. Completing an Associate of Arts (A.A.) degree or the Associate of Science (A.S.) in General Sciences at JCCC will satisfy all general education requirements at UMKC, including the Constitution requirement. The A.S. is a better option for most students wanting to transfer into SSE.  JCCC students transferring to UMKC without completing the A.A. or A.S. will have the option to elect to complete either the UMKC Essentials or the Missouri Transfer (MOTR) Core 42 curriculum to meet general education requirements.

**^To learn more about these two options and UMKC general education requirements, including how transfer coursework applies to specific** general education requirements **(**https://nam12.safelinks.protection.outlook.com/?url=http%3A%2F%2Fnextcatalog.jccc.edu%2Ftransfer-guides%2Fumkc%2Fumkc-general-education%2F&data=05%7C02%7Cskhalif2%40jccc.edu%7C3bbbe8fc84564328cf7008de1320415e%7C15244239dcf245e7aefd127b69fc5438%7C1%7C0%7C638969226426393815%7CUnknown%7CTWFpbGZsb3d8eyJFbXB0eU1hcGGkiOnRydWUsIlYiOiIwLjAuMDAwMCIsIIAiOiJXaW4zMiIsIkFOIjoiTWFpbCIsIldUIjoyfQ%3D%3D%7C0%7C%7C%7C&sdata=%2FvPga7IbeZ0jrCCeMsWei47YJU4Mi5k%2B50ooxjEZup4%3D&reserved=0**).**

## Chemistry (BA)

| Course Code Code | Course Title Title | Course Hours Hours | Transfer Code | Transfer Title | Transfer Hours |
|---|---|---|---|---|---|
| CHEM 124 & CHEM 125 | General Chemistry I Lecture* and General Chemistry I Lab* | 4 | CHEM 211 & CHEM 211L | General Chemistry I and Experimental Gen Chemistry I | 1 |
| CHEM 131 & CHEM 132 | General Chemistry II Lecture* and General Chemistry II Lab* | 4 | CHEM 212R & CHEM 212LR | General Chemistry II and Experimental Gen Chemistry II | 1 |
| CHEM 220 | Organic Chemistry I* | 5 | CHEM 321 | Organic Chemistry I | 3 |
| CHEM 221 | Organic Chemistry II* | 5 | CHEM 322R | Organic Chemistry II | 3 |
| **Select one of the following:** | | | | | |
| MATH 171 | College Algebra* | 3 | MATH 110 | "Math, Its Form and Impact" | 3 |
| MATH 173 | Precalculus* | 5 | MATH 120 | Precalculus | 5 |
| **Select one of the following:** | | | | | |
| MATH 241 | Calculus I* | 5 | MATH 210 | Calculus I | 4 |
| MATH 161 | Elementary Statistics* | 3 | STAT 235 Elementary Statistics** | | |
| PHYS 130 | College Physics I* | 5 | PHYSICS 210 | General Physic I | 4 |
| PHYS 131 | College Physics II* | 5 | PHYSICS 220 | General Physics II | 4 |

## Physics (BA)

| Course Code Code | Course Title Title | Course Hours Hours | Transfer Code | Transfer Title | Transfer Hours |
|---|---|---|---|---|---|
| CHEM 124 & CHEM 125 | General Chemistry I Lecture* and General Chemistry I Lab* | 4 | CHEM 211 & CHEM 211L | General Chemistry I and Experimental Gen Chemistry I | 1 |

| MATH 173 | Precalculus* | 5 | MATH 120 | Precalculus | 5 |
|---|---|---|---|---|---|
| MATH 241 | Calculus I* | 5 | MATH 210 | Calculus I | 4 |
| MATH 242 | Calculus II* | 5 | MATH 220 | Analytic Geometry Calc I | 4 |
| MATH 243 | Calculus III* | 5 | MATH 250 Calculus III | | |
| PHYS 130 | College Physics I* | 5 | PHYSICS 210 | General Physic I | 4 |
| PHYS 131 | College Physics II* | 5 | PHYSICS 220 | General Physics II | 4 |
| PHYS 220 | Engineering Physics I* | 5 | PHYSICS 240 | Physics Scientist/ Engineers I | 5 |
| PHYS 221 | Engineering Physics II* | 5 | PHYSICS 250 | Physics Scientist/ Engineers II | 5 |

## Electrical and Computer Engineering (BS) – A minimum of "C" or better in E&C – ENGR coursework is required.

| Course Code Code | Course Title Title | Course Hours | Transfer Code | Transfer Title | Transfer Hours |
|---|---|---|---|---|---|
| | | Hours | | | |
| **Select one of the following:** | | | | | |
| BIOL 121 | Introductory Biology for Non-Majors | 4 | BIOL 102 & BIOLOGY 102 | Lab Experiences in Biology and Biology and Living | 3 |
| CHEM 124 & CHEM 125 | General Chemistry I Lecture* and General Chemistry I Lab* | 4 | CHEM 211 & CHEM 211L | General Chemistry I and Experimental Gen Chemistry I | 1 |
| CS 200 | Concepts of Programming Algorithms Using C++* | 4 | COMP SCI 201L & COMP SCI 201R | Prblm Slvng/Prgrmmng II Lab and Prblm Slvng/ Prgmmng II | 3 |
| MATH 241 | Calculus I* | 5 | MATH 210 | Calculus I | 4 |
| MATH 242 | Calculus II* | 5 | MATH 220 | Analytic Geometry Calc I | 4 |
| MATH 243 | Calculus III* | 5 | EC-ENGR 241 Applied Engineering Analysis I | | |
| MATH 254 | Differential Equations* | 4 | MATH 345 | Ordinary Differential Equation | 4 |
| PHYS 220 | Engineering Physics I* | 5 | PHYSICS 240 | Physics Scientist/ Engineers I | 5 |
| PHYS 221 | Engineering Physics II* | 5 | PHYSICS 250 | Physics Scientist/ Engineers II | 5 |

## Chemistry (BS)

| Course Code Code | Course Title Title | Course Hours | Transfer Code | Transfer Title | Transfer Hours |
|---|---|---|---|---|---|
| | | Hours | | | |
| CHEM 124 & CHEM 125 | General Chemistry I Lecture* and General Chemistry I Lab* | 4 | CHEM 211 & CHEM 211L | General Chemistry I and Experimental Gen Chemistry I | 1 |
| CHEM 131 & CHEM 132 | General Chemistry II Lecture* and General Chemistry II Lab* | 4 | CHEM 212R & CHEM 212LR | General Chemistry II and Experimental Gen Chemistry II | 1 |
| CHEM 220 | Organic Chemistry I* | 5 | CHEM 321 | Organic Chemistry I | 3 |
| CHEM 221 | Organic Chemistry II* | 5 | CHEM 322R | Organic Chemistry II | 3 |
| MATH 173 | Precalculus* | 5 | MATH 120 | Precalculus | 5 |
| MATH 241 | Calculus I* | 5 | MATH 210 | Calculus I | 4 |

| MATH 242 | Calculus II* | 5 | MATH 220 | Analytic Geometry Calc I | 4 |
| MATH 243 | Calculus III* | 5 | MATH 250 Calculus III** | | |

**Select one of the following:**

| PHYS 220 | Engineering Physics I* | 5 | PHYSICS 240 | Physics Scientist/ Engineers I | 5 |
| PHYS 130 | College Physics I* | 5 | PHYSICS 210 | General Physic I | 4 |

**Select one of the following:**

| PHYS 221 | Engineering Physics II* | 5 | PHYSICS 250 | Physics Scientist/ Engineers II | 5 |
| PHYS 131 | College Physics II* | 5 | PHYSICS 220 | General Physics II | 4 |

## Physics (BS)

| Course Code Code | Course Title Title | Course Hours Hours | Transfer Code | Transfer Title | Transfer Hours |
| --- | --- | --- | --- | --- | --- |
| CHEM 124 & CHEM 125 | General Chemistry I Lecture* and General Chemistry I Lab* | 4 | CHEM 211 & CHEM 211L | General Chemistry I and Experimental Gen Chemistry I | 1 |
| CHEM 131 & CHEM 132 | General Chemistry II Lecture* and General Chemistry II Lab* | 4 | CHEM 212R & CHEM 212LR | General Chemistry II and Experimental Gen Chemistry II | 1 |
| MATH 173 | Precalculus* | 5 | MATH 120 | Precalculus | 5 |
| MATH 241 | Calculus I* | 5 | MATH 210 | Calculus I | 4 |
| MATH 242 | Calculus II* | 5 | MATH 220 | Analytic Geometry Calc I | 4 |
| MATH 243 | Calculus III* | 5 | MATH 250 Calculus III** | | |
| PHYS 220 | Engineering Physics I* | 5 | PHYSICS 240 | Physics Scientist/ Engineers I | 5 |
| PHYS 221 | Engineering Physics II* | 5 | PHYSICS 250 | Physics Scientist/ Engineers II | 5 |

## Physics with Astronomy Emphasis (BS)

| Course Code Code | Course Title Title | Course Hours Hours | Transfer Code | Transfer Title | Transfer Hours |
| --- | --- | --- | --- | --- | --- |
| CHEM 124 & CHEM 125 | General Chemistry I Lecture* and General Chemistry I Lab* | 4 | CHEM 211 & CHEM 211L | General Chemistry I and Experimental Gen Chemistry I | 1 |

**Select one of the following:**

| CS 200 | Concepts of Programming Algorithms Using C++* | 4 | COMP-SCI 101 Problem Solving Prog. I** | | |
| CS 202 | Concepts of Programming Algorithms using Python* | 4 | COMP-SCI 101 Problem Solving Prog. I** | | |
| CS 205 | Concepts of Programming Algorithms using Java* | 4 | COMP-SCI 101 Problem Solving Prog. I** | | |
| MATH 173 | Precalculus* | 5 | MATH 120 | Precalculus | 5 |
| MATH 241 | Calculus I* | 5 | MATH 210 | Calculus I | 4 |
| MATH 242 | Calculus II* | 5 | MATH 220 | Analytic Geometry Calc I | 4 |

| MATH 243 | Calculus III* | 5 | MATH 250 Calculus III** | | |
|---|---|---|---|---|---|
| PHYS 220 | Engineering Physics I* | 5 | PHYSICS 240 | Physics Scientist/ Engineers I | 5 |
| PHYS 221 | Engineering Physics II* | 5 | PHYSICS 250 | Physics Scientist/ Engineers II | 5 |

## Mechanical Engineering (BS)

| Course Code Code | Course Title Title | Course Hours Hours | Transfer Code | Transfer Title | Transfer Hours |
|---|---|---|---|---|---|
| CHEM 124 & CHEM 125 | General Chemistry I Lecture* and General Chemistry I Lab* | 4 | CHEM 211 & CHEM 211L | General Chemistry I and Experimental Gen Chemistry I | 1 |
| **Select one of the following:** | | | | | |
| CS 200 | Concepts of Programming Algorithms Using C++* | 4 | MEC-ENGR 219 Computer Programming for Engineers** | | |
| CS 202 | Concepts of Programming Algorithms using Python* | 4 | MEC-ENGR 219 Computer Programming for Engineers** | | |
| ENGR 251 | Statics* | 3 | CIV-ENGR 275 | Engineering Statics | 3 |
| ENGR 254 | Dynamics* | 3 | MEC-ENGR 285 Engineering Dynamics ** | | |
| ENGR 284 | Thermodynamics* | 4 | MEC-ENGR 299 Engineering Thermodynamics | | |
| MATH 246 | Elementary Linear Algebra* | 3 | MATH 300 | Linear Algebra I | 3 |
| MATH 241 | Calculus I* | 5 | MATH 210 | Calculus I | 4 |
| MATH 242 | Calculus II* | 5 | MATH 220 | Analytic Geometry Calc I | 4 |
| MATH 243 | Calculus III* | 5 | MATH 250 Calculus III** | | |
| MATH 254 | Differential Equations* | 4 | MATH 345 | Ordinary Differential Equation | 4 |
| PHYS 220 | Engineering Physics I* | 5 | PHYSICS 240 | Physics Scientist/ Engineers I | 5 |
| PHYS 221 | Engineering Physics II* | 5 | PHYSICS 250 | Physics Scientist/ Engineers II | 5 |

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|---|---|
| * | JCCC course has a prerequisite or corequisite. |
| ** | Denotes courses that must be completed with a grade of "C-" or above. |
| *** | Meets the requirement for the engineering degree, but will not count towards a major or minor in Math. |
| ^ | While this course can be transferred from JCCC to UMKC, students who take it at UMKC will be eligible for upperlevel credit. |

Last Approved Thu Nov 6 18:48:01 2025