

Exhibit 13

TRANSFER ADVISING GUIDE

Montgomery County Community College (MCCC) to University of the Sciences in Philadelphia A.A. Mathematics → B.S. Physics (*Tracks: General, Material Sciences, Astrophysics*)

**MCCC Associate of Arts
Mathematics**

**USciences Bachelor of Science
Physics (General, Material Sc. , Astrophysics)**

Montgomery CCC Courses	Cr.	USciences Courses	Cr.
ENG101 English Composition I	3	WR101 Writing & Rhetoric I	3
ENG102 English Composition II	3	WR102 Writing & Rhetoric II	3
SPC120 Public Speaking	3	CO204 Public Speaking <i>(replaces CO101)</i>	3
MAT190 Calculus I	4	MA122 Calculus I	4
MAT201 Calculus II	4	MA221 Calculus II	4
MAT202 Calculus III	4	MA222 Calculus III	4
MAT211 Foundations of Mathematical Prof	3	MAX01 Mathematics Elective <i>(serves as Elective)</i>	3
MAT223 Differential Equations	4	MA 320 Differential Equations	3
PHY151 Principles of Physics I	4	PY211 Physics I	4
PHY152 Principles of Physics II <i>(serves as Elective)</i>	4	PY212 Physics II	4
CHE151 Principle of Chemistry I <i>(serves as Elective)</i>	4	CH111 Principles of Chemistry I CH113 Principles of Chemistry Laboratory I	3 1
CHE152 Principle of Chemistry II <i>(serves as Elective)</i>	4	CH112 Principles of Chemistry II CH114 Principles of Chemistry Laboratory II	3 1
CIS111 Comp Science I: Programming & Concepts	3	CS201 Computer Programming I	3
Elective Choose One: ANT104 Intro to Cultural Anthropology ECO121 Macroeconomics ECO122 Microeconomics HIS101 History Western Civilization I HIS102 History Western Civilization II HIS203 History of the United States: to 1877 POL124 American National Government PSY101 Introduction to Psychology SOC101 Social Pol & Ethics Human Srvc SOC103 Social Problems	3	<i>(serves as GenEd MD Requirement)</i> AN103 Introduction to Anthropology EC101 Intro to Macroeconomics EC201 Intro to Microeconomics HI101 History Western Civilization I HI102 History Western Civilization II HIX01 History Elective POX01 Political Science Elective PS101 Intro to Psychology SO101 Introduction to Sociology SO205 Social Problems	3
Elective Choose One: ART101 Art History I ART102 Art History II ART103 Art History III ART111 Drawing I	3	<i>(serves as GenEd MD Requirement)</i> ARX01 Art Elective ARX01 Art Elective ARX01 Art Elective AR201 Drawing	3

ART121 Painting I ENG221 Literature of Western World 1 ENG222 Literature of Western World 2 MUS110 Music Appreciation		ARX01 Art Elective ENX01 English Elective ENX01 English Elective MUX01 Music Elective	
Elective Choose One: ART101 Art History I ART102 Art History II ART103 Art History III ART111 Drawing I ART121 Painting I ENG221 Literature of Western World 1 ENG222 Literature of Western World 2 MUS110 Music Appreciation	3	<i>(serves as GenEd Humanities Requirement)</i> ARX01 Art Elective ARX01 Art Elective ARX01 Art Elective AR201 Drawing ARX01 Art Elective ENX01 English Elective ENX01 English Elective MUX01 Music Elective	3
HIS102 History of Western Civ II OR HIS205 History of US From 1977	3	<i>(serves as GenEd Humanities Requirement)</i> HI102 History of Western Civ II OR HIX01 History Elective	3
Elective (Core Goal 10) Exercise & Health Science Choose One	2-3	PE101/102 Physical Education I/II	1
MCCC credits toward AA	61-62	Credits Accepted	59
Total MCCC Credits	61-62	Total Credits Accepted	59

A minimum 2.7 cumulative GPA is required for admission.

A minimum grade of “B” in all science and mathematics courses (Prefixes: CHE, MAT, PHY, BIO). Students who do not meet these minimum grade requirements can still transfer under the terms of this articulation agreement, subject to USciences departmental review and approval.

The courses encompassed in the A.A. degree from MCCC must be completed within the three years preceding matriculation at USciences. Students who take more than 3 years to complete the A.A. degree can still transfer under this articulation agreement, subject to USciences departmental review and approval.

PY100 - Physics Orientation (1 cr) and MA107-Precalculus (3 cr) will be waived for students transferring to USciences after earning the A.A. in Mathematics. However, the total credits required for graduation (includes transfer credits) will remain unchanged.

Graduation from USciences with a BS degree requires completion of specified courses and a total of 120-136 credit hours, depending upon the degree program. In order to enter USciences with U3 (junior) status and to facilitate the completion of a BS degree in two years of study at USciences, all students are strongly advised to complete more than 60 total credits of course work which is eligible for transfer to USciences. Students interested in transferring to USciences are strongly urged to contact the USciences Admission Office early in their enrollment at MCCC for advising.

In addition to the coursework provided in the above table, the following types of courses will be needed to complete the *General Education Discipline Requirements* in USciences' General Education Curriculum:

- 6 credits in Social Sciences

These 6 credits of coursework can be taken at MCCC or after transferring to USciences (currently included in the 3rd and 4th year at USciences). If the 6 credits are taken at MCCC, they should be selected from the following lists:

<p>6 credits in Social Science: Select TWO ANT 100, 104; CJS 220 ECO 121, 122, 130, 211, 221; GEO 130 POL 101, 124, 125, 201, 202, 231, 240, 245, 250, 280 PSY 101, 136, 137, 138, 200, 206, 208, 210, 214, 215, 216, 217, 218, 219, 231, 240, 245, 255, 299 SOC 101, 103, 105, 130, 220, 224, 230, 234, 244, 250, 254, 255 SPC 110, 111, 115, 120</p>	<p>GenEd Discipline Requirements – Social Sciences AN; SO 304 EC; SS PO PS SO CO 320</p>
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Suggested checklist for 3rd and 4th year at USciences for **BS in Physics (General track)** based on current approved curriculum:

(this checklist is for planning purpose only and it is subject to changes; it does not constitute a contract)

THIRD YEAR AT USCIENCES		
PY 213	Physics III	3
MA 316	Linear Algebra	3
ST 320	Introduction to Probability	3
PY 301	Modern Physics I	3
PY 310	Mechanics	3
PY 370	Math Methods for Phys Sci I	3
PY 380	Electronics	3
PY 406	Advanced Lab	1
PY 410	Electricity and Magnetism	3
PY 420	Optics and Wave Phenomena	3
PY 450	Quantum Mechanics	3
PY 371	Math Methods for the Phys Sci II	3

FOURTH YEAR AT USCIENCES		
PY 495	Undergraduate Research in Physics	2
	Physics Elective	3
PY 431	Statistical Mechanics	3
	GenEd Social Sciences Requirement	6
PY 496	Advanced Research in Physics	3
	Free Elective	7
	Physics Elective	6
	Physics/Biology/Chem elective	3
PY 305	Physics Seminar	3

Suggested checklist for 3rd and 4th year at USciences for **BS in Physics (Material Science track)** based on current approved curriculum:

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THIRD YEAR AT USCIENCES		
PY 213	Physics III	3
MA 316	Linear Algebra	3
ST 320	Introduction to Probability	3
PY 301	Modern Physics I	3
PY 310	Mechanics	3
PY 370	Math Methods for Phys Sci I	3
PY 380	Electronics	3
PY 406	Advanced Lab	1
PY 410	Electricity and Magnetism	3
PY 420	Optics and Wave Phenomena	3
PY 450	Quantum Mechanics	3
PY 371	Math Methods for the Phys Sci II	3

FOURTH YEAR AT USCIENCES		
PY 480	Introduction to Material Science	3
PY 495	Undergraduate Research in Physics	2
PY 431	Statistical Mechanics	3
	GenEd Social Sciences Requirement	6
PY 470	Solid State Physics	3
PY 496	Advanced Research in Physics	3
PY 440	Intro to Nano Science	3
	Physics/Biology/Chem elective	3
PY 305	Physics Seminar	3
	Free Elective	4

Suggested checklist for 3rd and 4th year at USciences for **BS in Physics (Astrophysics track)** based on current approved curriculum:

(this checklist is for planning purpose only and it is subject to changes; it does not constitute a contract)

THIRD YEAR AT USCIENCES		
PY 213	Physics III	3
MA 316	Linear Algebra	3
ST 320	Introduction to Probability	3
PY 301	Modern Physics I	3
PY 310	Mechanics	3
PY 370	Math Methods for Phys Sci I	3
PY 380	Electronics	3
PY 406	Advanced Lab	1
PY 410	Electricity and Magnetism	3
PY 430	Differential Geometry	3
PY 450	Quantum Mechanics	3
PY 371	Math Methods for the Phys Sci II	3

FOURTH YEAR AT USCIENCES		
PY 463	Physics of Stars and Black Holes	3
PY 495	Undergraduate Research in Physics	2
PY 431	Statistical Mechanics	3
	GenEd Social Sciences Requirement	6
PY 465	Intro to Cosmology	3
PY 496	Advanced Research in Physics	3
	Physics Elective	3
PY 420	Optics and Wave Phenomena	3
PY 305	Physics Seminar	3
	Free Elective	7

Progress in Completing USciences' General Education Curriculum

[For the most recent information, see the current USciences Catalog on its website]

Discipline Requirements (minimum of 41 credits)

Discipline Requirement	Community College Courses // USciences Courses*
Natural Science (ONE semester of lab required) 7 credits	CHE151 CHE152
Mathematics 6 credits	MAT190 & MAT201
Communication (written & oral) 9 credits	ENG101 & ENG102 & SPC120
Social Sciences 6 credits	Choose Two USciences Courses: PO (Political Science), PS (Psychology), SO (Sociology), AN (Anthropology), SS (Social Sciences), EC (Economics), CO (excluding CO 101 and CO 204)
Humanities 6 credits	Choose One: ART101, ART102, ART103, ART111, ART121, ENG221, ENG222, MUS110 Choose One: HIS102 or HIS205
Multidisciplinary Inquiry 6 credits (may be substituted by Social Sciences &/or Humanities courses)	Choose One: ANT104, ECO121, ECO122, HIS101, HIS102, HIS203, POL124, PSY101, SOC101, SOC103 Choose One: ART101, ART102, ART103, ART111, ART121, ENG221, ENG222, MUS110
Physical Education 1 credit	Choose One Elective (Core Goal 10) Exercise & Health Science

Skills, Values, and Attitudes (one approved course for each)

Skills, Values, and Attitudes	Community College Course	USciences Course [RED = courses taken after transferring to USciences]
Ethics		See list of USciences courses approved for Ethics
Information Literacy		See list of USciences courses approved for Inf Literacy
Oral Communication		PY305
Reasoning & Problem Solving	PHY121	
Technology	PHY121	
Written Communication	HIS101	OR USciences course

Skills requirement is usually fulfilled by taking courses that satisfy discipline requirements that are also approved for one or more GenEd skill.