Academic Plan - Associate of Science Physics

**Catalog Year: 2019/2020**

**Total Credits:60-63**

The purpose of a statewide articulation agreement is to identify the courses a student at a Colorado public community college must complete as part of an AA/AS degree to be guaranteed to be able to complete the designated baccalaureate degree program at any public four-year college and university (hereafter referred to as receiving institutions) that offers that program within the minimum number of credits designated by the Colorado Commission on Higher Education.

# General Education Courses

3 Credits, Arts / Humanities GT-AH1-AH4, available fall spring summer

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3 Credits, Arts / Humanities GT-AH1-AH4, available fall spring summer

3 Credits, ENG 121 - English Composition I: GT-CO1\*, available fall spring summer

3 Credits, ENG 122 - English Composition II: GT-CO2, available fall spring summer

3 Credits, History GT-HI1, available fall spring summer

3 Credits, Social / Behavioral Science GT-SS1-SS3, available fall spring summer

5 Credits, MAT 201 - Calculus I: GT-MA1, available fall spring summer

5 Credits, PHY 211 - Physics: Calculus-Based I with Lab: GT-SC1\*, available fall spring summer

5 Credits, PHY 212 - Physics: Calculus-Based II with Lab: GT-SC1\*, available fall spring

# Additional Required Courses

3 Credits, PHY 213 - Physics III: Calculus-Based Modern Physics, available spring

3-4 Credits, MAT 265 - Differential Equations OR MAT 261 - Differential Equations with Engineering Applications OR MAT 266 Differential Equations with Linear Algebray GT-MA1, available fall spring

4-5 Credits, CHE 112 - General College Chemistry II GT-SC1 OR CSC 160 - Computer Science I\*, available fall spring summer

4-5 Credits, MAT 203 - Calculus III OR MAT 204 - Calculus III w/Engineering Applications, available fall spring summer

5 Credits, CHE 111 - General College Chemistry I with Lab: GT-SC1\*, available fall spring summer

5 Credits, MAT 202 - Calculus II: GT-MA1, available fall spring summer

# Pre-Requisites, Co-Requisites, and Recommendations

CHE 111 - General College Chemistry I with Lab: GT-SC1\*

Pre-Requisite: MAT 121 - College Algebra: GT-MA1 or equivalent placement scores

ENG 122 - English Composition II: GT-CO2

Pre-Requisite: ENG 121 - English Composition I OR ENG 131 - Technical Writing I

MAT 201 - Calculus I: GT-MA1

Pre-Requisite: MAT 122 - College Trigonometry: GT-MA1 OR MAT 166 - Pre-Calculus: GT-MA1

MAT 202 - Calculus II: GT-MA1

Pre-Requisite: MAT 201 - Calculus I: GT-MA1

PHY 211 - Physics: Calculus-Based I with Lab: GT-SC1\*

Pre-Requisite: MAT 201 - Calculus I: GT-MA1

PHY 212 - Physics: Calculus-Based II with Lab: GT-SC1\*

Pre-Requisite: MAT 201 - Calculus I: GT-MA1

Pre-Requisite: PHY 211 - Physics: Calculus-Based I with Lab: GT-SC1

MAT 203 - Calculus III OR MAT 204 - Calculus III w/Engineering Applications

Pre-Requisite: MAT 202 - Calculus II: GT-MA1

PHY 213 - Physics III: Calculus-Based Modern Physics

Pre-Requisite: PHY 212 - Physics: Calculus-Based II with Lab: GT-SC1

MAT 265 - Differential Equations OR MAT 261 - Differential Equations with Engineering Applications OR MAT 266

Pre-Requisite: MAT 203 - Calculus III OR MAT 204 - Calculus III w/Engineering Applications

Pre-Requisite: MAT 204 - Calculus III with Engineering Applications: GT-MA1

CHE 112 - General College Chemistry II GT-SC1 OR CSC 160 - Computer Science I\*

Pre-Requisite: For CHE 112: CHE 111 and MAT 121

Pre-Requisite: For CSC 160: CSC 116 or CSC 119 and MAT 055/099 or higher

# Program Outcomes

Use graphical methods to document results and analyze problems.

Analyze physical situations and apply physical laws to solve problems.

Communicate scientific ideas and methods clearly in writing.

# Notes

Course availability is subject to change.

Refer to 19/20 catalog for specific requirements and important information about this degree.

The Colorado Department of Higher Education website has additional information about this statewide agreement.

Follow the Recommended Course Sequence on the following pages of this document.

Recommended courses are listed above for certain electives; consult with the Academic Advising Office (advising@arapahoe.edu or 303.797.5664) or the Physics Department for additional elective recommendations.

Students planning to transfer to University of Colorado Boulder must take CHE 112 (not CSC 160).

Students planning to transfer to University of Northern Colorado must take CSC 160 (not CHE 112).

Students planning to transfer to Fort Lewis College or University of Colorado - Colorado Springs must take both CSC 160 and CHE 112.

\*This course requires college level readiness as measured by Accuplacer, ACT, or SAT scores; approved high school course work that is less than five years old; or successful completion of appropriate college-readiness course.

AAA 101 – College 101: Student Experience is required for all new college students seeking degrees or transfer.

# Graduation Requirements

All courses required for this degree must be completed with a "C" or better to meet graduation requirements.

To graduate, students must apply for graduation (form available at www.arapahoe.edu/departments-and-programs/graduation) by the deadline and meet all degree requirements.

# RECOMMENDED COURSE SEQUENCE FULL-TIME TRACK

# Year 1: Fall

3 Credits, Arts / Humanities GT-AH1-AH4

5 Credits, CHE 111 - General College Chemistry I with Lab: GT-SC1

3 Credits, ENG 121 - English Composition I: GT-CO1

5 Credits, MAT 201 - Calculus I: GT-MA1

# Year 1: Spring

3 Credits, Arts / Humanities GT-AH1-AH4

3 Credits, ENG 122 - English Composition II: GT-CO2

5 Credits, MAT 202 - Calculus II: GT-MA1

5 Credits, PHY 211 - Physics: Calculus-Based I with Lab: GT-SC1

# Year 2: Fall

4-5 Credits, CHE 112 - General College Chemistry II GT-SC1 OR CSC 160 - Computer Science I

3 Credits, History GT-HI1

3-4 Credits, MAT 265 - Differential Equations OR MAT 261 - Differential Equations with Engineering Applications

5 Credits, PHY 212 - Physics: Calculus-Based II with Lab: GT-SC1

# Year 2: Spring

3 Credits, Arts / Humanities GT-AH1-AH4

4-5 Credits, MAT 203 - Calculus III OR MAT 204 - Calculus III w/Engineering Applications

3 Credits, PHY 213 - Physics III: Calculus-Based Modern Physics

3 Credits, Social / Behavioral Science GT-SS1-SS3

# RECOMMENDED COURSE SEQUENCE PART-TIME TRACK

## Year 1: Fall

3 Credits, ENG 121 - English Composition I: GT-CO1

5 Credits, MAT 201 - Calculus I: GT-MA1

## Year 1: Spring

3 Credits, Arts / Humanities GT-AH1-AH4

5 Credits, PHY 211 - Physics: Calculus-Based I with Lab: GT-SC1

## Year 1: Summer

3 Credits, Arts / Humanities GT-AH1-AH4

3 Credits, History GT-HI1

## Year 2: Fall

3 Credits, ENG 122 - English Composition II: GT-CO2

5 Credits, MAT 202 - Calculus II: GT-MA1

## Year 2: Spring

5 Credits, CHE 111 - General College Chemistry I with Lab: GT-SC1

5 Credits, PHY 212 - Physics: Calculus-Based II with Lab: GT-SC1

## Year 2: Summer

3 Credits, Arts / Humanities GT-AH1-AH4

3 Credits, Social / Behavioral Science GT-SS1-SS3

## Year 3: Fall

4-5 Credits, CHE 112 - General College Chemistry II GT-SC1 OR CSC 160 - Computer Science I

4-5 Credits, MAT 203 - Calculus III OR MAT 204 - Calculus III w/Engineering Applications

## Year 3: Spring

3-4 Credits, MAT 265 - Differential Equations OR MAT 261 - Differential Equations with Engineering Applications

3 Credits, PHY 213 - Physics III: Calculus-Based Modern Physics