

MITRANSFER PATHWAYS

ARTICULATION AGREEMENT

BIOLOGY

TO: MiTransfer Pathway Biology Participating Institutions

FROM: Michigan Community College Association, Michigan Association of State Universities, Michigan Independent Colleges and Universities

SUBJECT: MiTransfer Join/Modify Summary

The MiTransfer Pathways agreement, signed on December 9, 2019 provides for institutions to modify worksheets and equivalencies or join the MiTransfer Pathways agreement. The MCCA, MASU, and MICU worked with institutions to make the following adjustments to the Biology Pathway:

BIOLOGY

FALL 2020 JOIN/MODIFY

INSTITUTION	JOINING/ MODIFYING	APPENDIX A COMMUNITY COLLEGE WORKSHEET CHANGE	APPENDIX B UNIVERSITY WORKSHEET CHANGE	APPENDIX C EQUIVALENCY CHANGE	APPENDIX D EXCEPTION CHANGE
Ferris State University	Joining		X	X	X
Kellogg Community College	Modifying	X			
Michigan Technological University	Modifying		X		
Mid Michigan College	Modifying	X			
North Central Michigan College	Modifying	X			
Saginaw Valley State University	Joining		X	X	X
University of Michigan-Dearborn	Modifying		X		

BIOLOGY

SPRING 2021 JOIN/MODIFY

INSTITUTION	JOINING/ MODIFYING	APPENDIX A COMMUNITY COLLEGE WORKSHEET CHANGE	APPENDIX B UNIVERSITY WORKSHEET CHANGE	APPENDIX C EQUIVALENCY CHANGE	APPENDIX D EXCEPTION CHANGE
Andrews University	Joining		X	X	
Concordia University-Ann Arbor	Joining		X	X	
Muskegon Community College	Modifying	X			

BIOLOGY

FALL 2021 JOIN/MODIFY

INSTITUTION	JOINING/ MODIFYING	APPENDIX A COMMUNITY COLLEGE WORKSHEET CHANGE	APPENDIX B UNIVERSITY WORKSHEET CHANGE	APPENDIX C EQUIVALENCY CHANGE	APPENDIX D EXCEPTION CHANGE
Cornerstone University	Joining		X	X	X
Kellogg Community College	Modifying	X			
Macomb Community College	Modifying	X			
North Central Michigan College	Modifying	X			
Siena Heights University	Joining		X	X	X

BIOLOGY

SPRING 2022 JOIN/MODIFY

INSTITUTION	JOINING/ MODIFYING	APPENDIX A COMMUNITY COLLEGE WORKSHEET CHANGE	APPENDIX B UNIVERSITY WORKSHEET CHANGE	APPENDIX C EQUIVALENCY CHANGE	APPENDIX D EXCEPTION CHANGE
Jackson College	Modifying	X			

BIOLOGY

FALL 2022 JOIN/MODIFY

INSTITUTION	JOINING/ MODIFYING	APPENDIX A COMMUNITY COLLEGE WORKSHEET CHANGE	APPENDIX B UNIVERSITY WORKSHEET CHANGE	APPENDIX C EQUIVALENCY CHANGE	APPENDIX D EXCEPTION CHANGE
Kellogg Community College	Modifying	X			
Kirtland Community College	Modifying	X			

MITRANSFER PATHWAYS ARTICULATION AGREEMENT: BIOLOGY

OVERVIEW

In Fall 2017, the Michigan Community College Association (MCCA) and the Michigan Association of State Universities (MASU) received a one-time appropriation from the state of Michigan to support the development of multi-institutional associate to bachelor's degree transfer pathways. MCCA and MASU in partnership with the Michigan Independent Colleges and Universities (MICU) and the Michigan Association of Collegiate Registrars and Admissions Officers (MACRAO) convened the Transfer Steering Committee with more than 30 representatives from colleges and universities from across the state to develop the MiTransfer Pathways project. The MiTransfer Pathways project plan selected 12 programs with high enrollment and/or high labor market demand. The goal of the project was to build multi-institutional transfer pathways so students can enroll at any participating community college, complete an associate degree, transfer, and complete a bachelor's degree in the identified program of study.

In spring and fall of 2018, biology faculty from community colleges, public universities, and independent colleges and universities in Michigan met to identify courses that are required, recommended, optional or appropriate in the first and second year of the bachelor's degree programs at all participating universities. We refer to these commonly required courses as "MiTransfer Pathways courses." The MiTransfer Pathways courses in biology are:

- Cell/Molecular Biology
- Organismal Biology
- General Chemistry I
- General Chemistry II
- Organic Chemistry I
- Organic Chemistry II

These courses have been reviewed by receiving institutions and will be accepted for transfer and applied to the biology program at all participating institutions (unless otherwise indicated in this agreement). The participating institutions agreed to establish direct equivalencies between these courses. Direct equivalencies are established when a course at the sending institution transfers as a direct equivalent to the course at the receiving institution and the credit is transcribed as a department and number (i.e. BIO 105) instead of department and no number (i.e. BIO GEN or BIO 100X). Direct equivalency is preferred because students can see how the transferred course applies to the degree program.

In addition to identifying MiTransfer Pathways courses as described above, the faculty also identified Remaining Degree Requirements. The Remaining Degree Requirements identified by receiving institutions (universities) include courses that students can transfer from the community college but were not identified as MiTransfer Pathways courses because they were not accepted at every participating receiving institution. The Remaining Degree Requirements identified by sending

MITRANSFER PATHWAYS ARTICULATION AGREEMENT: BIOLOGY

institutions (community colleges) included courses or requirements that meet community college degree requirements but will not necessarily transfer to participating universities. Participating institutions submitted program worksheets (see Appendices A and B) that outlined these courses. Participating institutions will use these worksheets to communicate requirements to students.

TERMS OF THE AGREEMENT

1. This agreement is effective on December 6, 2019.
2. Participating institutions agree that all courses must be completed with a grade of C (2.0) or better unless otherwise indicated by the receiving institution.
3. Participating institutions agree that to use this agreement, students must apply and be admitted to the participating institution and to the program if the program requires secondary admission. Receiving institutions agree to communicate the application process for institution and program admissions for transfer students on a publicly available website and through advising.
4. Participating institutions agree to accept the Michigan Transfer Agreement (MTA) in accordance with the institutions' MTA policy.
5. Participating institutions agree to award equivalent credit for MiTransfer Pathways courses (see Course Equivalency Matrices in Appendix C) and apply courses to the bachelor's degree requirements unless otherwise noted in the Course Equivalency Exceptions documented in Appendix D. If no direct equivalent exists because the course is not offered or required at the receiving institution, then the receiving institution agrees to accept the course and apply the course toward the Biology degree program. If the community college does not offer the course, the community college should communicate this information to students on a publicly available website and/or the Michigan Transfer Network at mitransfer.org and help students find an equivalent course at other institutions.
6. Participating institutions agree to upload course equivalencies for MiTransfer Pathways courses to the Michigan Transfer Network at mitransfer.org.
7. Receiving institutions agree to accept the Remaining Degree Requirements as outlined in the receiving institutions' Program Worksheet included in Appendix B. Participating institutions agree to work toward awarding direct equivalency for Remaining Degree Requirements, apply courses to the bachelor's degree requirements, and add course equivalencies to the Michigan Transfer Network.

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8. Sending institutions agree that Remaining Degree Requirements identified by community colleges that are not required by the receiving institution may not transfer or may not apply to bachelor's degree requirements at the receiving institution.
9. Alternative credit awarded by the sending institution through AP, CLEP, IB, credit earned through credit for prior learning, or other means may be accepted and applied to the degree program at the discretion of the university. Sending institutions may apply alternative credit to the associate degree, but students should confirm whether or not credit is acceptable at receiving institutions.
10. Students may earn credit from multiple institutions as long as the course was completed at a sending institution that is participating in the agreement. There is no assurance that credits earned from institutions not participating in the agreement will apply.
11. Participating institutions agree to maintain up-to-date course equivalencies and information about their participation with this agreement. This information will be made publicly available through their own systems and on the mitransfer.org website.
12. In the performance of their respective duties and obligations under this Agreement, each Party is an independent contractor, and neither is the agent, employee, or servant of the other. Each is responsible only for its own conduct.

MITRANSFER PATHWAYS ARTICULATION AGREEMENT: BIOLOGY

MAINTENANCE AND REVIEW

Modifications to Worksheets and Equivalencies

Colleges and universities will use the worksheets in Appendix A and B as the basis to advise transfer students. Any changes to program worksheets in Appendix A and B should be communicated to participating institutions as soon as possible to avoid students completing courses that will not transfer. Changes may include:

- Adding programs in the pathway (e.g., add Environmental Studies to the Biology pathway);
- Modifying, removing, or adding MiTransfer Pathways courses;
- Modifying, removing, or adding courses to the Remaining Degree Requirements;
- Materially modifying the educational experience or content of the MiTransfer Pathways courses.

If any of the aforementioned changes occur, participating institutions are expected to communicate with their sector representative from the Michigan Association of State Universities (MASU), Michigan Community College Association (MCCA), or Michigan Independent Colleges and Universities (MICU). These changes will be vetted among participating institutions, including reviewing and establishing equivalencies where needed. Changes to the worksheets and equivalencies will be documented and available at mitransfer.org website.

Joining the Agreement

Institutions can join the agreement at any time and should contact their sector representative at the Michigan Association of State Universities, the Michigan Community College Association, or the Michigan Independent Colleges and Universities. Institutions that join the agreement will be required to comply with the terms of the agreement.

Renewing the Agreement

This agreement will be up for renewal on June 30, 2022. The Michigan Community College Association, the Michigan Association of State Universities, and the Michigan Independent Colleges and Universities agree to coordinate renewal of this agreement during the 2021-2022 academic year. Participating institutions may choose to leave the agreement at that time.

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SIGNATURES

By signing this agreement, institutions agree to the terms of the agreement and maintenance and review.

MICHIGAN COMMUNITY COLLEGE ASSOCIATION

SIGNATURE	NAME	TITLE	INSTITUTION
<i>Deborah A. Bayer, MS</i>	Deborah A. Bayer, MS	Vice President of Instruction	Alpena Community College
<i>Deborah J. Hautau</i>	Deborah J. Hautau	Biology Faculty	Alpena Community College
<i>Donald C. MacMaster, Ed.D.</i>	Donald C. MacMaster, Ed.D.	President	Alpena Community College
<i>Jeremy Belanger</i>	Jeremy Belanger	Executive Director of Transfer & Student Advising	Bay College
<i>Jean Goodnow, Ph.D.</i>	Jean Goodnow, Ph.D.	President	Delta College
<i>Reva Curry, Ph.D</i>	Reva Curry, Ph.D	Vice President of Instruction/Learning Services	Delta College
<i>Virginia Przygocki</i>	Virginia Przygocki	Dean, Career Education and Learning Partnerships	Delta College
<i>David H. Devier</i>	David H. Devier	President	Glen Oaks Community College
<i>Michael Goldin</i>	Michael Goldin	Interim Dean of Academics	Glen Oaks Community College
<i>George McNulty</i>	George McNulty	President	Gogebic Community College
<i>Bill Pink</i>	Bill Pink	President	Grand Rapids Community College

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<i>Brian Knetl</i>	Brian Knetl	Provost and Executive Vice President, Academic and Student Affairs	Grand Rapids Community College
<i>Janice Gilliland</i>	Janice Gilliland	Dean of the School of Science, Technology, Engineering and Mathematics	Henry Ford College
<i>Michael A. Nealon</i>	Michael A. Nealon	Vice President of Academic Affairs	Henry Ford College
<i>Dr. Daniel J. Phelan</i>	Dr. Daniel J. Phelan	President/CEO	Jackson College
<i>Dr. Kate Thirolf</i>	Dr. Kate Thirolf	Vice President for Instruction	Jackson College
<i>Dr. Todd Butler</i>	Dr. Todd Butler	Dean, Arts & Sciences	Jackson College
<i>Marshall Washington, Ph.D.</i>	Marshall Washington, Ph.D.	President	Kalamazoo Valley Community College
<i>Peter Linden</i>	Peter Linden	Provost and Vice President for Instruction and Student Services	Kalamazoo Valley Community College
<i>Carole J. Davis</i>	Carole J. Davis	Chair, Math and Science	Kellogg Community College
<i>Mark P. O'Connell</i>	Mark P. O'Connell	President	Kellogg Community College
<i>Paul R. Watson II</i>	Paul R. Watson II	Vice President for Instruction	Kellogg Community College
<i>Tonya P. Forbes</i>	Tonya P. Forbes	Dean, Arts and Sciences	Kellogg Community College
<i>Julie Lavender</i>	Julie Lavender	Vice President of Instructional Services	Kirtland Community College
<i>Thomas Quinn</i>	Thomas Quinn	President	Kirtland Community College

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<i>Dr. Leslie Kellogg</i>	Dr. Leslie Kellogg	Provost and Vice President of Academic Affairs	Lake Michigan College
<i>Brent Knight</i>	Brent Knight	President	Lansing Community College
<i>Donald Ritzenhein, Ph.D.</i>	Donald Ritzenhein, Ph.D.	Provost and Vice President of the Learning Unit	Macomb Community College
<i>Christine M. Hammond, Ph.D.</i>	Christine M. Hammond, Ph.D.	President	Mid Michigan College
<i>Jennifer Fager, Ph.D.</i>	Jennifer Fager, Ph.D.	Vice President for Academic Affairs	Mid Michigan College
<i>Richard J. Smith, Ed.D.</i>	Richard J. Smith, Ed.D.	Associate Dean and Transfer Liaison	Mid Michigan College
<i>Grace Yackee</i>	Grace Yackee	Vice President of Instruction	Monroe County Community College
<i>Kevin Cooper</i>	Kevin Cooper	Dean of Science/Mathematics	Monroe County Community College
<i>Kojo Quartey</i>	Kojo Quartey	President	Monroe County Community College
<i>Robert Ferrentino</i>	Robert Ferrentino	President	Montcalm Community College
<i>Robert Spohr</i>	Robert Spohr	Vice President for Academic Affairs	Montcalm Community College
<i>Beverly Walker-Griffa</i>	Beverly Walker-Griffa	President	Mott Community College
<i>Chuck Wade</i>	Chuck Wade	Biology Faculty	Mott Community College
<i>Michelle Glenn</i>	Michelle Glenn	Interim Vice President of Academic Affairs	Mott Community College
<i>Todd Troutman</i>	Todd Troutman	Dean of Science & Mathematics	Mott Community College
<i>Dale Nesbary, Ph.D.</i>	Dale Nesbary, Ph.D.	President	Muskegon Community College

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<i>Kelley Conrad</i>	Kelley Conrad	Vice President for Academic Affairs	Muskegon Community College
<i>David Roland Finley, Ph.D.</i>	David Roland Finley, Ph.D.	President	North Central Michigan College
<i>Debra Pharo</i>	Debra Pharo	Science and Mathematics Academic Area Chair	Northwestern Michigan College
<i>Stephen N. Siciliano</i>	Stephen N. Siciliano	Vice President for Educational Services	Northwestern Michigan College
<i>Timothy J. Nelson</i>	Timothy J. Nelson	President	Northwestern Michigan College
<i>M. Cathey Maze</i>	M. Cathey Maze	Vice Chancellor for Academic Affairs	Oakland Community College
<i>Cheryl Hawkins, PhD</i>	Cheryl Hawkins, PhD	Vice President and Chief Academic Officer	Schoolcraft College
<i>Conway Jeffress, PhD</i>	Conway Jeffress, PhD	President	Schoolcraft College
<i>Michele Kelly, PhD</i>	Michele Kelly, PhD	Dean Liberal Arts and Science	Schoolcraft College
<i>David W Fleming</i>	David W Fleming	Vice President of Instruction	Southwestern Michigan College
<i>Julie Armstrong</i>	Julie Armstrong	Chief of Staff	St. Clair County Community College
<i>Kimberly Hurns, DM</i>	Kimberly Hurns, DM	Vice President for Instruction	Washtenaw Community College
<i>Patrick J. McNally</i>	Patrick J. McNally	Vice Chancellor, Curriculum and Distance Learning	Wayne County Community College District
<i>Dr. Brooke Portmann</i>	Dr. Brooke Portmann	Dean of Arts and Sciences	West Shore Community College
<i>Dr. Mark Kinney</i>	Dr. Mark Kinney	Vice President of Academics and Student Services	West Shore Community College
<i>Dr. Paul Bilinski</i>	Dr. Paul Bilinski	Associate Professor of Biology	West Shore Community College

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<i>Scott Ward</i>	Scott Ward	President	West Shore Community College
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MICHIGAN ASSOCIATION OF STATE UNIVERSITIES

SIGNATURE	NAME	TITLE	INSTITUTION
<i>Dr. Jane M. Davison</i>	Dr. Jane M. Davison	Acting Dean, College of Science and Engineering	Central Michigan University
<i>Dr. Mary Schutten</i>	Dr. Mary Schutten	Provost and Executive Vice President	Central Michigan University
<i>Dr. Robert O. Davies</i>	Dr. Robert O. Davies	President	Central Michigan University
<i>Dana Heller, Ph.D.</i>	Dana Heller, Ph.D.	Dean, College of Arts & Sciences	Eastern Michigan University
<i>James M. Smith, Ph.D.</i>	James M. Smith, Ph.D.	President	Eastern Michigan University
<i>Marianne Laporte, Ph.D.</i>	Marianne Laporte, Ph.D.	Department Head, Biology	Eastern Michigan University
<i>Rhonda Longworth, Ph.D.</i>	Rhonda Longworth, Ph.D.	Provost and Executive Vice President	Eastern Michigan University
<i>Dr. Leonard Johnson</i>	Dr. Leonard Johnson	Associate Provost, Academic Affairs	Ferris State University
<i>Philomena V. Mantella</i>	Philomena V. Mantella	President	Grand Valley State University
<i>Maria C. Cimitile</i>	Maria C. Cimitile	Provost and Executive Vice President for Academic and Student Affairs	Grand Valley State University
<i>Chandrashekhar Joshi</i>	Chandrashekhar Joshi	Department Chair, Biological Sciences	Michigan Technological University
<i>David Hemmer</i>	David Hemmer	Dean, College of Sciences and Arts	Michigan Technological University

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<i>Jacqueline Huntoon</i>	Jacqueline Huntoon	Provost and Senior Vice President for Academic Affairs	Michigan Technological University
<i>Richard Koubek</i>	Richard Koubek	President	Michigan Technological University
<i>Dr. John Rebers</i>	Dr. John Rebers	Professor & Department Head Biology	Northern Michigan University
<i>Kerri D. Schuiling</i>	Kerri D. Schuiling	Provost & VPAA	Northern Michigan University
<i>Rob Winn</i>	Rob Winn	Dean College of Arts & Sciences	Northern Michigan University
<i>James P. Lentini, D.M.A.</i>	James P. Lentini, D.M.A.	Senior Vice President for Academic Affairs and Provost	Oakland University
<i>Deborah Huntley</i>	Deborah Huntley	Provost	Saginaw Valley State University
<i>Catherine A. Davy</i>	Catherine A. Davy	Provost and Vice Chancellor for Academic Affairs	University of Michigan-Dearborn

MICHIGAN INDEPENDENT COLLEGES AND UNIVERSITIES

SIGNATURE	NAME	TITLE	INSTITUTION
<i>Christon Arthur</i>	Christon Arthur	Provost	Andrews University
<i>Amy Rebok Rosenthal</i>	Amy Rebok Rosenthal	Dean, Undergraduate Education	Andrews University
<i>Robert Zdor</i>	Robert Zdor	Biology Department Chair	Andrews University
<i>Steven Montreal, Ph.D.</i>	Steven Montreal, Ph.D.	Dean of School of Arts and Sciences	Concordia University Ann Arbor

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<i>Johnathan Marko</i>	Johnathan Marko	Dean of Undergraduate Education	Cornerstone University
<i>Gilda Gely, Ph.D.</i>	Gilda Gely, Ph.D.	Executive Vice President for Academics and Provost	Davenport University
<i>Richard J. Pappas, Ed.D.</i>	Richard J. Pappas, Ed.D.	President	Davenport University
<i>Fredi deYampert</i>	Fredi deYampert	VP, Academic Affairs	Finlandia University
<i>Maria Vaz</i>	Maria Vaz	Vice President for Academic Affairs/Provost	Lawrence Technological University
<i>Dr. Srini Kambhampati</i>	Dr. Srini Kambhampati	Dean of the College of Arts and Science	Lawrence Technological University
<i>Dr. Brian Stogner</i>	Dr. Brian Stogner	President	Rochester University
<i>Dr. David Brackney</i>	Dr. David Brackney	Chair, Department of Science and Mathematics	Rochester University
<i>Dr. Remylin Bruder</i>	Dr. Remylin Bruder	Provost	Rochester University
<i>Sharon Weber</i>	Sharon Weber	Vice President of Academic Affairs	Siena Heights University
<i>Ronald Delap</i>	Ronald Delap	Associate Vice President of Academic Affairs	Spring Arbor University
<i>Antoine M. Garibaldi, Ph.D.</i>	Antoine M. Garibaldi, Ph.D.	President	University of Detroit Mercy
<i>Katherine E Snyder, Ph.D.</i>	Katherine E Snyder, Ph.D.	Dean, College of Engineering and Science	University of Detroit Mercy
<i>Pamela Zarkowski, J.D., MPH</i>	Pamela Zarkowski, J.D., MPH	Provost and Vice President of Academic Affairs	University of Detroit Mercy

APPENDIX A:
Participating Community College MiTransfer Biology Pathway Worksheets



BIOLOGY PROGRAM WORKSHEET

DEGREE PROGRAM INFORMATION

Institution	Alpena Community College
Degree/Program	Biology
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 161	Gen. College Biology I	4
Organismal Biology	BIO 162	Gen. College Biology II	4
General Chemistry I	CEM 121	Gen. and Inorg. Chemistry I	4
General Chemistry II	CEM 122	Inorg. Chem & Quan. Analysis	4
Organic Chemistry I	CEM 221	Organic Chem I	4
Organic Chemistry II	CEM 222	Organic Chem II	4
TOTAL CREDITS			24

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
American Government requirement	PLS 221 or 222; or HST 221 and 222	American Government and Politics or State and Local Government; US History I and US History II	MTA Social Science
Elective	MTH 131 or 223	Calculus I or Statistical Methods	5 or 4
Elective	PHY 121	College Physics I	4
Elective	PHY 122	College Physics II	4
Elective			1-2
CC Only: Add remaining hours			14
TOTAL CREDITS			60



BIOLOGY PROGRAM WORKSHEET

DEGREE PROGRAM INFORMATION

Institution	Bay College
Degree/Program	AS-Biology
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL 112	Cells and Molecules	4
Organismal Biology	BIOL 110	Evolution and Diversity	4
General Chemistry I	CHEM 110	General Chemistry I	5
General Chemistry II	CHEM 112	General Chemistry II	5
Organic Chemistry I	CHEM 201	Organic Chemistry I	4
Organic Chemistry II	CHEM 202	Organic Chemistry II	4
TOTAL CREDITS			26

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Recommendation	MATH 210	Statistics	4
Program Electives	Choice	Choice	12
		CC Only: Add remaining hours	16
TOTAL CREDITS			60

DEGREE PROGRAM INFORMATION

Institution	Delta College
Degree/Program	A.S. Biology
Credits Required	62

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 171	Integrated General Biology I	4
Organismal Biology	BIO 172W	Integrated General Biology II	4
General Chemistry I	CHM 111	General and Inorganic Chemistry I	5
General Chemistry II	CHM 112	General and Inorganic Chemistry II	5
Organic Chemistry I	CHM 210 and 210LW	Organic Chemistry I and Laboratory	5
Organic Chemistry II	CHM 220 and 220LW	Organic Chemistry II and Laboratory	5
TOTAL CREDITS			28

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Lifelong Wellness (from list)			2
		CC Only: Add remaining hours	2
TOTAL CREDITS			62

DEGREE PROGRAM INFORMATION

Institution	Glen Oaks Community College
Degree/Program	Associate of Science/ Science
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mittransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 121	Gen Bio I	4
Organismal Biology	BIO 122	Gen Bio II	4
General Chemistry I	CHEM 133	General Chemistry I	4
General Chemistry II	CHEM 134	General Chemistry II	4
Organic Chemistry I	CHEM 210	Organic Chemistry I	4
Organic Chemistry II	CHEM 211	Organic Chemistry II	4
TOTAL CREDITS			24

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
	MATH 161	Calculus I	4
Math and/or Science Electives	BIO, GEOL, GEOG, PHYS, and MATH prefix		8 or 9
		Remaining hours	
TOTAL CREDITS			60 or 61

DEGREE PROGRAM INFORMATION

Institution	GOGEBIC COMMUNITY COLLEGE
Degree/Program	Biological Sciences
Credits Required	64-66

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO101	Principles of Biology	4
Organismal Biology	BIO102	Biological Diversity	4
General Chemistry I	CHM151	General & Inorganic Chemistry	5
General Chemistry II	CHM152	Gen & Inorganic Chemistry II	5
Organic Chemistry I	CHM201	Organic Chemistry I	4
Organic Chemistry II	CHM202	Organic Chemistry II	4
TOTAL CREDITS			22

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	MTH150	Calculus I	5
Program Requirement	ORI100	College Experience	1
Math/Science Electives			12-14
		CC Only: Add remaining hours	18-20
TOTAL CREDITS			64-66

DEGREE PROGRAM INFORMATION

Institution	Grand Rapids Community College
Degree/Program	Associate of Arts/Associate of Science
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BI 151	Introduction to Cells, Molecules, and Genes	4
Organismal Biology	BI 152	Biological Diversity	4
General Chemistry I	CHM 130 and CHM 131	General Chemistry I and General Chemistry I Lab	4 + 1
General Chemistry II	CHM 140 and CHM 141	General Chemistry II and General Chemistry II Lab	4 + 1
Organic Chemistry I	CHM 260 and CHM 261	Organic Chemistry I and Organic Chemistry I Lab	4 + 1
Organic Chemistry II	CHM 270 and CHM 271	Organic Chemistry II and Organic Chemistry II Lab	4 + 1
TOTAL CREDITS			28

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
GRCC currently has a specific Pre-Biology program in its Catalog that may have additional coursework outlined based primarily on transfer institution requirements. However, besides MTA, GRCC does not have any additional degree requirements (such as government, wellness, etc).			
CC Only: Add remaining hours			10
TOTAL CREDITS			60

DEGREE PROGRAM INFORMATION

Institution	Henry Ford College
Degree/Program	Associate in Science / Biology
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 152	Cells and Molecular Biology	4
Organismal Biology	BIO 150	Biology: Organisms, Genes, and Ecology	4
General Chemistry I	CHEM 141	Principles of General and Inorganic Chemistry I	5
General Chemistry II	CHEM 142	Principles of General and Inorganic Chemistry II	5
Organic Chemistry I	CHEM 241 AND CHEM 243	Organic Chemistry I AND Microscale Organic Chemistry Laboratory I	6
Organic Chemistry II	CHEM 242 AND 244	Organic Chemistry II AND Microscale Organic Chemistry Laboratory II	6
TOTAL CREDITS			30

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Computer Technology	Choose from list of approved courses		3
		CC Only: Add remaining hours	4
TOTAL CREDITS			7

ASSOCIATE DEGREE PROGRAM INFORMATION

Institution	Jackson College
Degree/Program	Associate in Science
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 161	General Biology I	4 (MTA)
Organismal Biology	BIO 162	General Biology II	4
General Chemistry I	CEM 141	General Chemistry I	5 (MTA)
General Chemistry II	CEM 142	General Chemistry II	5
Organic Chemistry I	CEM 241	Organic Chemistry I	5
Organic Chemistry II	CEM 242	Organic Chemistry II	5

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They might not be accepted for transfer by universities participating in the agreement. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
First Year Experienter	SEM 140	Seminar in Life Pathways	3
GEO 2: Equity and Inclusion in a Diverse Society	Selection for GEO 2 list	Some MTA courses meet this req.	3
Remaining hours (transfer electives)			17

ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.

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BIOLOGY PROGRAM WORKSHEET

DEGREE PROGRAM INFORMATION

Institution	Kalamazoo Valley Community College
Degree/Program	Associate of Science (AS), Biological Sciences
Credits Required	62

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 101	Cellular Biology	4
Organismal Biology	BIO 104	Organismal Biology	4
General Chemistry I	CHM 120	General Chemistry I	4
General Chemistry II	CHM 130	General Chemistry II	4
Organic Chemistry I	CHM 220	Organic Chemistry I	5
Organic Chemistry II	CHM 230	Organic Chemistry II	5
TOTAL CREDITS			26

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Mathematics	MATH 160	Calculus I	5
Mathematics	MATH 220	Probability & Statistics	4
CC Only: Add remaining hours			1
TOTAL CREDITS			62

ASSOCIATE DEGREE PROGRAM INFORMATION

Institution	Kellogg Community College
Degree/Program	Associate in Science - Biology
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL 110	Principles of Biology: Cellular	4
Organismal Biology	BIOL 109	Principles of Biology: Organismal	4
General Chemistry I	CHEM 110	General Chemistry 1	4
General Chemistry II	CHEM 111	General Chemistry 2	4
Organic Chemistry I	CHEM 201	Organic Chemistry 1	4
Organic Chemistry II	CHEM 202	Organic Chemistry 2	4

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They might not be accepted for transfer by universities participating in the agreement. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	FYS 101	First Year Seminar	1
Program Requirement	ENGL 151 or ENGL 151H	Freshman Composition or Freshman Comp Honors	3
Program Requirement	ENGL/COMM options	Many Options	3
Program Requirement	Personal & Cultural Engagement Core – MTA Humanities/Fine Arts	Many Options – 2 different disciplines	6
Program Requirement	Personal & Cultural Engagement – MTA Social Science	Many Options – 2 different disciplines	6
Program Requirement	MTA Mathematics	Many options	3-4
Program Requirement	Math	Many Options	4
Program Requirement	Service Learning Endorsement (SERV 100 or SERV 200 or completed in another course)	Service Learning	0-3
Remaining hours (transfer electives)			8-11

ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.

Students should seek an appointment with an Academic Advisor to determine courses which best meet individual academic goals and to discuss transfer options including verification of courses towards the completion of the Michigan Transfer Agreement (MTA). Students must complete a minimum of 60 credit in approved courses to earn a degree at Kellogg Community College with a minimum cumulative grade point average of 2.0 or higher. Contact Academic Advising at kellogg.edu/advising or call 269-965-4124.

Service-Learning endorsement is required! Additional required degree criteria is listed in the KCC Academic Catalog under degree and certificate requirements.

Students should work with an academic advisor to determine the best elective courses based on individual academic and transfer goals.

DEGREE PROGRAM INFORMATION

Institution	Kirtland Community College
Degree/Program	Associate in Science and Arts
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 11700	Biology I for STEM Majors	4
Organismal Biology	BIO 11800	Biology II for STEM Majors	4
General Chemistry I	CHE 10101/CHE 10102	General Chemistry I & Lab	4/1
General Chemistry II	CHE 10201/CHE 10202	General Chemistry II & Lab	4/1
Organic Chemistry I	CHE 20101/CHE 20102	Organic Chemistry II & Lab	4/1
Organic Chemistry II	CHE 20201/CHE 20202	Organic Chemistry II & Lab	4/1
TOTAL CREDITS			28

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

Students can choose from these courses as possible electives until they reach a total of 60 credits.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
	BIO 10100	Biology for Non-STEM Majors	4
	BIO 10700	Essentials of Anatomy & Physiology	4
	BIO 20100	General Zoology	4
	BIO 21002/BIO 21003	Microbiology & Lab	3/1
	BIO 23500	Anatomy & Physiology I	4
	BIO 23600	Anatomy & Physiology II	4
	CHE 10000	Chemical Science	4
		CC Only: Add remaining hours	Varies
TOTAL CREDITS			60



BIOLOGY PROGRAM WORKSHEET

DEGREE PROGRAM INFORMATION

Institution	Lake Michigan College
Degree/Program	Assoc. in Science/Biology
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

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The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL 111	Principles of Biology I	4
Organismal Biology	BIOL 112	Principles of Biology II	4
General Chemistry I	CHEM 111	General Chemistry I	4
General Chemistry II	CHEM 112	General Chemistry II	4
Organic Chemistry I	CHEM 203	Organic Chemistry I	4
Organic Chemistry II	CHEM 204	Organic Chemistry II	4
TOTAL CREDITS			24

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Biology	BIOL 205	Human Anatomy	4
Physical Education	PHED 200, 212 or 214	Healthful Living, Health & Fitness, or Personal Health	1
	General Electives		12
		CC Only: Add remaining hours	17
		TOTAL CREDITS	60

DEGREE PROGRAM INFORMATION

Institution	Lansing Community College
Degree/Program	Biology AS
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL 127	Cell biology	4
Organismal Biology	BIOL 128	Organismal biology	4
General Chemistry I	CHEM 151/161	General Chemistry I	5
General Chemistry II	CHEM 152/162	General Chemistry II	4
Organic Chemistry I	CHEM 251	Organic Chemistry I	4
Organic Chemistry II	CHEM 252/272	Organic Chemistry II and lab	6
TOTAL CREDITS			27

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Elective from list (choose one)	BIOL 270	Human Genetics	3
	BIOL 275	Molecular Biology I	4
	BIOL 210	Natural Resource Conservation	4
	BIOL 260	Botany	4
	BIOL 265	Zoology	4
TOTAL CREDITS			60 or 61

ASSOCIATE DEGREE PROGRAM INFORMATION

Institution	Macomb Community College
Degree/Program	Associate of Science
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL 1000	General Biology I	4
Organismal Biology	BIOL 1010	General Biology II	4
General Chemistry I	CHEM 1170	General Chemistry I	4
General Chemistry II	CHEM 1180	General Chemistry II	4
Organic Chemistry I	CHEM 2260	Organic Chemistry I	4
Organic Chemistry II	CHEM 2280	Organic Chemistry II	4
Organic Chemistry Lab	CHEM 2270	Organic Chemistry Lab	2

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They might not be accepted for transfer by universities participating in the agreement. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Remaining hours (transfer electives)			34

ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.

DEGREE PROGRAM INFORMATION

Institution	Mid Michigan College
Degree/Program	Associate in Science/Math-Science Transfer
Credits Required	62

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 111	Fundamentals of Cellular and Molecular Biology	4
Organismal Biology	BIO 112	Fundamentals of Evolution and Diversity	4
General Chemistry I	CHM 111	General College Chemistry I	5
General Chemistry II	CHM 112	General College Chemistry II	5
Organic Chemistry I	CHM 245/255	Organic Chemistry and Lab I	5
Organic Chemistry II	CHM 246/256	Organic Chemistry and Lab II	5

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
		Remaining hours - Elective credits to meet degree minimum of 62	10

DEGREE PROGRAM INFORMATION

Institution	Monroe County Community College
Degree/Program	Associate of Science/ Transfer Pathway- Biology
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL 151	Biological Sciences I	4
Organismal Biology	BIOL 153	Biological Sciences II	4
General Chemistry I	CHEM 151	General College Chemistry I	4
General Chemistry II	CHEM 152	General College Chemistry II	4
Organic Chemistry I	CHEM 251	Organic Chemistry I	4
Organic Chemistry II	CHEM 252	Organic Chemistry II	4
TOTAL CREDITS			24

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
General Education	CIS 130	Introduction to Computer Information Systems	3
		Remaining hours	
TOTAL CREDITS			60

DEGREE PROGRAM INFORMATION

Institution	Montcalm Community College
Degree/Program	MITransfer Pathway Biology Associate of Science
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL121	College Biology I	4
Organismal Biology	BIOL122	College Biology II	4
General Chemistry I	CHEM220	College Chemistry I	5
General Chemistry II	CHEM221	College Chemistry II	5
Organic Chemistry I	CHEM251	Organic Chemistry I	5
Organic Chemistry II	CHEM252	Organic Chemistry II	5
TOTAL CREDITS			28

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Elective credits for a total of 60			
English Requirement	ENGL 100	Freshman English 1	3
MTA Math requirement	MATH 159	College Algebra	4
MTA Social Science requirement	POLI 240	American Political System	3
Communication Requirement	COMM 220 or 210	Interpersonal Communications or Speech	3
		CC Only: Add remaining hours	
TOTAL CREDITS			60



BIOLOGY PROGRAM WORKSHEET

DEGREE PROGRAM INFORMATION

Institution	Mott Community college
Degree/Program	Associates in Science/Biology
Credits Required	63 or 64

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	Biol 111	Fundamentals of Biology	4
Organismal Biology	Biol 112	Diversity of life	4
General Chemistry I	Chem 131	General Chemistry I	5
General Chemistry II	Chem 132	General Chemistry II	5
Organic Chemistry I	Chem 237	Organic Chemistry I	5
Organic Chemistry II	Chem 238	Organic Chemistry II	5
TOTAL CREDITS			28

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
		CC Only: Add remaining hours	
TOTAL CREDITS			

DEGREE PROGRAM INFORMATION

Institution	Muskegon Community College
Degree/Program	Associate in Science and Arts
Credits Required	62

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology (MTA Course)	BIOL 130L&L	General Biology I	4
Organismal Biology	BIOL 131L&L	General Biology II	4
General Chemistry I (MTA Course)	CHEM 101LEC and CHEM 100A	Gen and Inorganic Chem 1 and Lab	5
General Chemistry II	CHEM 102LEC and CHEM 102A	Gen and Inorganic Chem 2 and lab	5
Organic Chemistry I	CHEM 201E and CHEM 201F	Organic Chem 1 and Lab	5
Organic Chemistry II	CHEM 202F and CHEM 202G	Organic Chem 2 and Lab	5
TOTAL CREDITS			28

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
General Education	CIS 110 or CIS 120A	Computer Concepts or Intro to Computer Information Systems	3
General Education	Physical Education	Selection of Courses	2
General Education	Selection of Courses	Selection of Courses	3
Electives	Selection of Courses	Selection of Courses	5
TOTAL CREDITS			13

ASSOCIATE DEGREE PROGRAM INFORMATION

Institution	North Central Michigan College
Degree/Program	Associate of Science with a Concentration in Biology
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 151	General Biology I (MTA)	4
Organismal Biology	BIO 152	General Biology II	4
General Chemistry I	CEM 121	Principles of Chemistry I (MTA)	5
General Chemistry II	CEM 122	Principles of Chemistry II	5
Organic Chemistry I	CEM 231	Organic Chemistry I	5
Organic Chemistry II	CEM 232	Organic Chemistry II	5

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They might not be accepted for transfer by universities participating in the agreement. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
General Education	ENG 112	English Composition II	3
General Education	COM 111 or COM 170	Public Speaking or Interpersonal Communications	3
Remaining hours (transfer electives)			7-12

ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.

-MATH 130-College Algebra or higher satisfies the Associate of Science math requirement and can be used in the additional Science and Math electives section of the A.S. degree.

-A minimum of 60 earned credits required to complete degree.



BIOLOGY MiTRANSFER PATHWAY

DEGREE PROGRAM INFORMATION

Institution	Northwestern Michigan College
Degree/Program	Associate in Science & Arts (ASA)/ Biology
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 115	Cell, Plant & Ecosystem Biology	4
Organismal Biology	BIO 116	Genetic, Evolution & Animal Biology	4
General Chemistry I	CHM 150	General Chemistry I	5
General Chemistry II	CHM 151	General Chemistry II	5
Organic Chemistry I	CHM 250	Organic Chemistry I	5
Organic Chemistry II	CHM 251	Organic Chemistry II	5
TOTAL CREDITS			28

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
		Remaining hours	
TOTAL CREDITS			



BIOLOGY PROGRAM WORKSHEET

DEGREE PROGRAM INFORMATION

Institution	Oakland Community College
Degree/Program	Associate in Science
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 1530	Molecular Biology	4
Organismal Biology	BIO 1560	Organismal Biology	4
General Chemistry I	CHE 1510	General Chemistry I	4
General Chemistry II	CHE 1520	General Chemistry II	4
Organic Chemistry I	CHE 2610	Organic Chemistry I	4
Organic Chemistry II	CHE 2620	Organic Chemistry II	4
TOTAL CREDITS			24

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
		CC Only: Add remaining hours	14
TOTAL CREDITS			60

DEGREE PROGRAM INFORMATION

Institution	Schoolcraft College
Degree/Program	Associate in Science
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL 120	Principles of Biology 1	5
Organismal Biology	BIOL 130	Principles of Biology 2	5
General Chemistry I	CHEM 111	General Chemistry 1	4
General Chemistry II	CHEM 117	General Chemistry 2 and Qualitative Analysis	5
Organic Chemistry I	CHEM 213	Organic Chemistry 1	5
Organic Chemistry II	CHEM 214	Organic Chemistry 2	5
TOTAL CREDITS			29

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Select 7 additional credits from the MTA list			7
		CC Only: Add remaining hours	7
TOTAL CREDITS			60

DEGREE PROGRAM INFORMATION

Institution	Southwestern Michigan College
Degree/Program	A.S. Biology
Credits Required	63

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL 101	Gen. Biology I	5
Organismal Biology	BIOL 102	Gen. Biology II	5
General Chemistry I	CHEM 101	General Chemistry I	5
General Chemistry II	CHEM 102	General Chemistry II	5
Organic Chemistry I	CHEM 201	Organic Chem I	5
Organic Chemistry II	CHEM 202	Organic Chem II	5
TOTAL CREDITS			30

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Mathematics	MATH 130	Precalculus	5
Physics	PHYS 101	Intro Physics I	5
Physics	PHYS 102	Intro Physics II	5
CC Only: Add remaining hours			15
TOTAL CREDITS			63



BIOLOGY MiTRANSFER PATHWAY

DEGREE PROGRAM INFORMATION

Institution	St. Clair County Community College
Degree/Program	Associate in Science/ Biology
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 120	Cellular and Molecular Biology	4
Organismal Biology	BIO 121	Organismal Biology	4
General Chemistry I	CHM 111	Chemistry Theory and Principles with Analysis	5
General Chemistry II	CHM 112	Chemistry Theory and Principles with Analysis	5
Organic Chemistry I	CHM 215	Organic Chemistry I	5
Organic Chemistry II	CHM 216	Organic Chemistry II	5
TOTAL CREDITS			28

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
		Remaining hours	2
TOTAL CREDITS			60

DEGREE PROGRAM INFORMATION

Institution	Washtenaw Community College
Degree/Program	Associate in Science in Math and Science – Biology Concentration
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 162	General Biology II Cells & Molecules	4
Organismal Biology	BIO 161	General Biology I Ecology and Evolution	4
General Chemistry I	CEM 111	General Chemistry I	4
General Chemistry II	CEM 122	General Chemistry II	4
Organic Chemistry I	CEM 211	Organic Chemistry I	4
Organic Chemistry II	CEM 222	Organic Chemistry II	4
TOTAL CREDITS			16

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement - Select one course from the following:	BIO 111, BIO 208, BIO 215, BIO 227, or BIO 237	Anatomy & Physiology – Normal Structure & Function Genetics Cell & Molecular Biology Biology of Animals Microbiology	5 Or 4
Open Electives			7 - 8
		CC Only: Add remaining hours	
TOTAL CREDITS			60

DEGREE PROGRAM INFORMATION

Institution	Wayne County Community College District
Degree/Program	Associate of Science
Credits Required	60

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 155	Introductory Biology	4
Organismal Biology			
General Chemistry I	CHM 136	General Chemistry I	4
General Chemistry II	CHM 145	General Chemistry II	4
Organic Chemistry I	CHM 250	Organic Chemistry I	4
Organic Chemistry II	CHM 252	Organic Chemistry II	4
TOTAL CREDITS			20

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
General Educations	Humanities	Dance, Philosophy, Music, Languages, MWS 102, Humanities, English 200 level	3
General Educations	Social Science	Economics, Geography, History, Psychology,	3
General Educations	Electives		4
CC Only: Add remaining hours			
TOTAL CREDITS			60

DEGREE PROGRAM INFORMATION

Institution	West Shore Community College
Degree/Program	Associate of Science/ Biology
Credits Required	63

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 122	General Biology I	4
Organismal Biology	BIO 123	General Biology II	4
General Chemistry I	CHM 122	General Chemistry I	4
General Chemistry II	CHM 123	General Chemistry II	4
Organic Chemistry I	CHM 232	Organic Chemistry I	4
Organic Chemistry II	CHM 233	Organic Chemistry II	4
TOTAL CREDITS			24

REMAINING DEGREE REQUIREMENTS

These are additional associate degree requirements that are not MTA or MiTransfer Pathways courses. They may not be accepted for transfer by universities participating in the agreement. If there are remaining hours, use the Remaining Degree Requirements in Appendix B identified by the university to which the student plans to transfer to select courses that meet bachelor's degree requirements.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Social Science/ Category C	Category C	Diverse Disciplines	3
Communications III/ Category C	SPE 101, 110, or 206	Principles of Public Speaking, Interpersonal Comm, Small Group Comm	3
Humanities & Fine Arts	Category C	Diverse Disciplines	3
AS	BIS 160, BIO 245	Desktop Apps, Genetics	3-4
		Remaining hours	
TOTAL CREDITS			

APPENDIX B:

Participating Four-Year College and University MiTransfer Biology Pathway Worksheets

DEGREE PROGRAM INFORMATION

Institution	Andrews University
Degree/Program	BS Biology
Credits Required	124

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether or not any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. Be aware that "double count" policies differ from institution to institution. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the College Algebra pathway.

MITRANSFER PATHWAYS COURSES

Add the commonly agreed upon "pathways courses" which were identified at the MiTransfer Pathways Summit. If a course also fulfills an MTA distribution requirement, please list here but only count the hours in the MTA section.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL 165	Fundamentals of Biology	5
Organismal Biology	BIOL 166	Fundamentals of Biology	5
General Chemistry I	CHEM 131	General Chemistry I	4
General Chemistry II	CHEM 132	General Chemistry II	4
Organic Chemistry I	CHEM 231, Chem 241 (lab)	Organic Chemistry I	3, 1
Organic Chemistry II	CHEM 232, Chem 242 (lab)	Organic Chemistry II	3, 1
TOTAL CREDITS			26

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Cognate	PHYS 241	General Physics I	4
Program cognate	PHYS 242	General Physics II	4
Program Elective	HORT 226	Plant Systematics & ID	3
Program Cognate	MATH 195	Calculus I for Biology	4
			CC Only: Add remaining hours
TOTAL CREDITS			15

Institution	Central Michigan University
Degree/Program	Biology
Credits Required	120

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether or not any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. Be aware that "double count" policies differ from institution to institution. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 112	Foundations of Cell Biology	4
Organismal Biology	BIO 111	Foundations of Evolution and Diversity	4
General Chemistry I	CHM 131	General Chemistry I	4
General Chemistry II	CHM 132	General Chemistry II	4
Organic Chemistry I	CHM 345	Organic Chemistry I	3
Organic Chemistry II	CHM 346	Organic Chemistry II	3
TOTAL CREDITS			22

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	MTH 130	Pre-Calculus Mathematics	4
General Education	ENG 201	Intermediate Composition	3
		CC Only: Add remaining hours	
TOTAL CREDITS			7

BACHELOR'S DEGREE PROGRAM INFORMATION

Institution	Concordia University Ann Arbor
Degree/Program	BS/Biology
Credits Required	126

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO151	Functional Human Biology I	4
Organismal Biology	BIO152	Functional Human Biology II	4
General Chemistry I	CHEM141	General Chemistry I	4
General Chemistry II	CHEM142	General Chemistry II	4
Organic Chemistry I	CHEM241	Organic Chemistry I	4
Organic Chemistry II	CHEM242	Organic Chemistry II	4

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Core Requirement	HHP100	Stewardship of the Body	1
Core Requirement	HHP1XX	Activity Course	1
Major Requirement	BIO240	Zoology	4
Major Requirement	BIO244	Botany	4
Major Requirement	PHYS151	General Physics I	4
Major Requirement	PHYS152	General Physics II	4
Major Requirement	BIO260	Microbiology	4

ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.

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DEGREE PROGRAM INFORMATION

Institution	Cornerstone University
Degree/Program	Bachelor of Science – Pre Medical Major
Credits Required	120

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 151	General Biology	4
Organismal Biology	N/A		
General Chemistry I	CHM 121	General Chemistry I	4
General Chemistry II	CHM 122	General Chemistry II	4
Organic Chemistry I	CHM 230 and CHM-231	Organic Chemistry I (Org Chem Lab)	5
Organic Chemistry II	CHM 232 and CHM 233	Organic Chemistry II (Org Chem II lab)	5
TOTAL CREDITS			22

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	BIO 233	Zoology	4
Program Requirement			
Program Requirement			
TOTAL CREDITS			4

DEGREE PROGRAM INFORMATION

Institution	Davenport University
Degree/Program	Bachelor of Science in Biological Laboratory Science
Credits Required	120

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL110/BIOL110L	Foundations of Cell Biology/Lab	4
Organismal Biology	BIOL111/BIOL111L	Organisms and Populations/Lab	4
General Chemistry I	CHEM160/CHEM160L	General Chemistry I/Lab	4
General Chemistry II	CHEM161/CHEM161L	General Chemistry II/Lab	4
Organic Chemistry I	CHEM250/CHEM250L	Organic Chemistry I/Lab	6
Organic Chemistry II	CHEM255/CHEM255L	Organic Chemistry II/Lab	6
TOTAL CREDITS			28

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	BIOL221/221L	Anatomy & Physiology I/Lab	4
Program Requirement	BIOL222/222L	Anatomy & Physiology II/Lab	4
General Education	MATH150	Pre-Calculus	4
Program Requirement	PHYS210/PHYS210L	Required Science Course	4
Program Requirement	PHYS220/PHYS220L	Required Science Course	4
TOTAL CREDITS			20

DEGREE PROGRAM INFORMATION

Institution	Eastern Michigan University
Degree/Program	Biology, Bachelor of Science
Credits Required	124 hours

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether or not any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. Be aware that "double count" policies differ from institution to institution. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the College Algebra pathway.

MiTRANSFER PATHWAYS COURSES

Add the commonly agreed upon "pathways courses" which were identified at the MiTransfer Pathways Summit. If a course also fulfills an MTA distribution requirement, please list here but only count the hours in the MTA section.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 110/111	Introductory Biology I & Lab	3/2
Organismal Biology	BIO 120/121	Introductory Biology II & Lab	3/2
General Chemistry I	CHEM 121/122	General Chemistry I & Lab	3/1
General Chemistry II	CHEM 123/124	General Chemistry II & Lab	3/1
Organic Chemistry I	CHEM 371	Organic Chemistry I	3
Organic Chemistry II	CHEM 372/373	Organic Chemistry II & Lab	3/2
TOTAL CREDITS			26

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement (Concentration)	PHY 221	Mechanics, Sound and Heat	4
Program Requirement (Concentration)	PHY 222	Electricity and Light	4
Program Requirement (Concentration)	STAT 170	Elementary Statistics	3
CC Only: Add remaining hours			
TOTAL CREDITS			11

BACHELOR'S DEGREE PROGRAM INFORMATION

Institution	Ferris State University
Degree/Program	Bachelor of Science/Biology
Credits Required	120

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL 121	General Biology 1	4
Organismal Biology	BIOL 122	General Biology II	4
General Chemistry I	CHEM 121	General Chemistry I	5
General Chemistry II	CHEM 122	General Chemistry II	5
Organic Chemistry I	CHEM 321	Organic Chemistry I	5
Organic Chemistry II	CHEM 322	Organic Chemistry II	5

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
General Education	ENGL 250 or COMM 121		3
General Education	ENGL 311, 321 or 323		3
General Education	Culture Competency Elective (200 Level)		3
General Education	Self and Society Competency Elective (200 Level)		3
Major Requirements	Select 36 credits from major requirement list		36
Supporting Sciences	24-37 credits required (MATH 120 or higher, minimum of 17 credits in CHEM courses including biochemistry, minimum of 4 credits in PHYS courses)		24-37
Biology Application Area	Additional courses in Biology (must be advisor approved)		5
Electives	13-26 credits required		13-26

DEGREE PROGRAM INFORMATION

Institution	Finlandia University
Degree/Program	Bachelor of Arts in Biology
Credits Required	120

MICHIGAN TRANSFER AGREEMENT (MTA)

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The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 111	Biology: Essentials for Life	4
Organismal Biology	BIOL 113	Biology: Diversity of Life	4
General Chemistry I	CHM 115	General Chemistry I	4
General Chemistry II	CHM 116	General Chemistry II	4
Organic Chemistry I	CHM 215	Organic Chemistry I	4
Organic Chemistry II	CHM 216	Organic Chemistry II	4
TOTAL CREDITS			20

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
General Education	REL or FNS	Any Religion or Finnish Studies Course	3
Program Requirement	BIO 171	Anatomy & Physiology I	4
Program Requirement	BIO 172	Anatomy & Physiology II	4
TOTAL CREDITS			11

Institution	Grand Valley State University
Degree/Program	BS and BA in Biology (all programs)
Credits Required	120

MICHIGAN TRANSFER AGREEMENT (MTA)

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The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 120	General Biology I with Lab	4
Organismal Biology	BIO 121	General Biology II with Lab	4
General Chemistry I	CHM 115	Principles of Chemistry I w/Lab	4
General Chemistry II	CHM 116	Principles of Chemistry II w/Lab	5
Organic Chemistry I	CHM 241	*Organic Chemistry I	4
Organic Chemistry II	CHM 242	*Organic Chemistry II	4
TOTAL CREDITS			26

*GVSU Biology majors have two upper level chemistry sequences to choose from:

- CHM 231 (Introductory Organic Chemistry w/Lab) and CHM 232 (Introductory Biochemistry w/lab)
- CHM 241 and 242 (Organic Chemistry I and II) – for students interested in Pre-Medical, Pre-Vet, Pre-professional and Graduate School Programs

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hours
Minimum required prerequisite for chemistry and physics	MTH 122	**College Algebra	3
Minimum required prerequisite for PHY 220	MTH 123	**Trigonometry	3
Math Cognate Option	STA 215	Introductory Applied Statistics	3
Required/Core Course	BIO 215	Ecology w/Lab	4
Required/Core Course	BIO 210	Evolutionary Biology	3
Physics Option	PHY 220	***General Physics I w/lab	5

Physics Option	PHY 221	***General Physics II w/lab	5
TOTAL CREDITS			26

**Math course selection will depend on required Chemistry and Physics options:

- MTH 122 or MTH 125 or MTH 201 required for CHM 116
- MTH 122 or MTH 201 required for PHY 200
- MTH 122 (College Algebra) and MTH 123 (Trigonometry) (or placement test) required for PHY 220
- MTH 201 (Calculus I) required for PHY 230
- MTH 202 (Calculus II) required for PHY 231
- MTH 122 (College Algebra) and MTH 123 (Trigonometry) (or placement test) required for MTH 201 (Calculus I)

*** GVSU Biology majors have three Physics sequences to choose from:

- PHY 200 (Physics for the Life Sciences w/lab)
- PHY 220 and 221 (algebra-based Physics w/labs) – for students interested in Pre-Medical, Pre-Vet, Pre-professional and Graduate School Programs
- PHY 230 and 231 (calculus based Physics w/labs) – for students interested in some select Pre-medical and Pre-professional programs. Students should consult university websites for program admission standards.

DEGREE PROGRAM INFORMATION

Institution	Lawrence Technological University
Degree/Program	Bachelor of Science in Molecular & Cell Biology
Credits Required	123

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 1213/BIO 1221	Biology 1/Lab	4
Organismal Biology	BIO 1223/BIO 1231	Biology 2/Lab	4
General Chemistry I	CHM 1213/BIO 1221	University Chemistry 1/Lab	4
General Chemistry II	CHM 1223/1231	University Chemistry 2/Lab	4
Organic Chemistry I	CHM 2313/2311	Organic Chemistry I/Lab	4
Organic Chemistry II	CHM 2323/2321	Organic Chemistry 2/Lab	4
TOTAL CREDITS			24

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	MCS 2124	Statistics	4
Program Requirement	SSC/PSY 1000	Social Science/Psychology Elective	3
Program Requirement	BIO 2313/2321	Microbiology/Lab	4
Program Requirement	MCS 1414	Calculus 1	4
Program Requirement	PHY 2213/1221	College Physics I/Lab	4
Program Requirement	PHY 2223/1221	College Physics II/Lab	4
TOTAL CREDITS			23

Institution	Michigan Technological University
Degree/Program	Bachelor of Science in Biological Sciences (All concentrations: General Biology, Ecology, & Pre-Professional)
Credits Required	128

MICHIGAN TRANSFER AGREEMENT (MTA)

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The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Organismal Biology	BL 1110/1110	General Biology I	4
Cell/Molecular Biology	BL 1200/1210	General Biology II	4
General Chemistry I	CH 1150	University Chemistry I	3
	CH 1151	University Chemistry Lab I	1
General Chemistry II	CH 1160	University Chemistry II	3
	CH 1161	University Chemistry Lab II	1
Organic Chemistry I	CH 2410	Organic Chemistry I	3
	CH 2411	Organic Chemistry Lab I	1
Organic Chemistry II	CH 2420	Organic Chemistry II	3
	CH 2421	Organic Chemistry Lab II	2
TOTAL CREDITS			25

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement (All)	PH 1110 (Lecture) and PH 1111 (Lab)	College Physics I and College Physics Lab I	3 1
Program Requirement (All)	PH 1210 (Lecture) and PH 1200 (Lab)	College Physics II and Physics by Inquiry II (Lab)	3 1
Program Requirement (All)	MA1135	Calculus for Life Sciences	4
CC Only: Add remaining hours			
TOTAL CREDITS			12

Institution	Northern Michigan University
Degree/Program	Biology (with concentrations in Botany, Ecology, General Biology, Microbiology, Physiology, or Zoology)
Credits Required	120

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether or not any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. Be aware that "double count" policies differ from institution to institution. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BI 111	Introductory Biology - Principles	4
Organismal Biology	BI 112	Introductory Biology – Diversity	4
General Chemistry I	CH 111	General Chemistry I	5
General Chemistry II	CH 112	General Chemistry II	5
Organic Chemistry I	CH 315/CH 317 (lecture/lab) or CH 220	Organic Chemistry I Intro to Organic Chemistry	4/ 5
Organic Chemistry II	CH 325/CH 327 (lecture/lab): required for Botany, Microbiology, Physiology & Zoology concentrations	Organic Chemistry II	4
TOTAL CREDITS			26-27

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program requirement	PH 201	College Physics I	5
Program requirement	PH 202	College Physics II	5
Many students take physics in their junior or senior year, some take physics in their first two years.			
Only 1 semester of physics is required for students with Ecology or General Biology concentrations.			
		CC Only: Add remaining hours	
TOTAL CREDITS			10

Institution	Oakland University
Degree/Program	Biology BA or BS
Credits Required	124 total credits

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether or not any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. Be aware that "double count" policies differ from institution to institution. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MITRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 1200 + BIO 1201	Biology I + Biology Lab	5
Organismal Biology	BIO 1300	Biology II	4
General Chemistry I	CHM 1440 + 1470	General Chemistry I + lab	5
General Chemistry II	CHM 1450 + 1480	General Chemistry II + lab	5
Organic Chemistry I	CHM 2340	Organic Chemistry I	4
Organic Chemistry II (B.S. Only)	CHM 2350	Organic Chemistry II	4
TOTAL CREDITS			27

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	STA 2220	Introduction to Statistics	4
Program Requirement	MTH 1441	Pre-calculus	4
Program Requirement (B.S. Only)	MTH 1554	Calculus I	4
Program Requirement	PHY (1010 or 1510) + 1100	(Gen or Intro) Physics I + Lab	5
Program Requirement	PHY (1020 or 1520) + 1110	(Gen or Intro) Physics II + Lab	5
BIO elective	BIO 3520	Intro to Human Microbiology	4
BIO elective	BIO 2100, 2101, and 2600	Human Anatomy & Physiology	9
			CC Only: Add remaining hours
TOTAL CREDITS			35

DEGREE PROGRAM INFORMATION

Institution	Rochester University
Degree/Program	Bachelor of Science in Biology
Credits Required	120

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 1013/1011 Lab or BIO 1014	Biological Science I w/Lab	4
Organismal Biology	BIO 1024	Biological Science II w/Lab	4
General Chemistry I	CHE 1514	College Chemistry I I w/Lab	4
General Chemistry II	CHE 1524	College Chemistry II w/Lab	4
Organic Chemistry I	CHE 2514	Organic Chemistry I	4
Organic Chemistry II	CHE 2524	Organic Chemistry II	4
TOTAL CREDITS			24

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	BIO 2114	Human A and P I w/ Lab	4
Program Requirement	BIO 2124	Human A and P II w/ Lab	4
Program Requirement	BIO 3323/BIO 3321 Lab	Microbiology and Micro Lab	4
Program Requirement	PHS 2014	General Physics I	4
Program Requirement	PHS 2024	General Physics II	4
Program Requirement	MAT 1334	Pre-Calculus	4
TOTAL CREDITS			24

BACHELOR'S DEGREE PROGRAM INFORMATION

Institution	Saginaw Valley State University
Degree/Program	Biological Science (B.S)
Credits Required	124 credits (33 foundation credits – 43 required credits – 12 required electives)

MICHIGAN TRANSFER AGREEMENT (MTA)

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The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL*182 BIOL*182L	Intro to Cell and Molecular Biology Cell and Molecular Biology Lab	3 credits 1 credit
Organismal Biology	BIOL*181 BIOL*181L	Intro to Ecology, Evolution, Diversity/Ecology, Evolution, Diversity Lab	3 credits 1 credit
General Chemistry I	CHEM*111 CHEM*111L	General Chemistry I Lecture General Chemistry I Lab	4 credits 1 credit
General Chemistry II	CHEM*112 CHEM*112L	General Chemistry II Lecture General Chemistry II Lab	4 credits 1 credit
Organic Chemistry I	CHEM*230 CHEM*231	Organic Chemistry I Lecture Organic Chemistry I Lab	4 credits 1 credit
Organic Chemistry II	CHEM*330 CHEM*331	Organic Chemistry II Lecture Organic Chemistry II Lab	4 credits 1 credit

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
General Education Category 3 and Program Requirement	MATH*132B	Statistical Methods: Biostatistics	4 credits
General Education Category 3 and Program Requirement	MATH*140 OR MATH*161	Precalculus OR Calculus I	4 credits
General Education Category 4 and Program Requirement	PHYS*111/PHYS*111L and PHYS*112/PHYS*112L OR PHYS*211/PHYS*211L and PHYS*212/PHYS*212L	General Physics I (with lab) and General Physics II (with lab) OR	10 credits OR 10 credits

		Analytical Physics I (with lab) and Analytical Physics II (with lab)	
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ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.

A minor is required.

BACHELOR'S DEGREE PROGRAM INFORMATION

Institution	Saginaw Valley State University
Degree/Program	Cell Biology, Molecular Biology, and Biomedical Sciences (B.S.)
Credits Required	124 credits (42 foundation credits – 29 required credits – 20 elective credits)

MICHIGAN TRANSFER AGREEMENT (MTA)

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The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL*182 BIOL*182L	Intro to Cell and Molecular Biology Cell and Molecular Biology Lab	3 credits 1 credit
Organismal Biology	BIOL*181 BIOL*181L	Intro to Ecology, Evolution, Diversity/Ecology, Evolution, Diversity Lab	3 credits 1 credit
General Chemistry I	CHEM*111 CHEM*111L	General Chemistry I Lecture General Chemistry I Lab	4 credits 1 credit
General Chemistry II	CHEM*112 CHEM*112L	General Chemistry II Lecture General Chemistry II Lab	4 credits 1 credit
Organic Chemistry I	CHEM*230 CHEM*231	Organic Chemistry I Lecture Organic Chemistry I Lab	4 credits 1 credit
Organic Chemistry II	CHEM*330 CHEM*331	Organic Chemistry II Lecture Organic Chemistry II Lab	4 credits 1 credit

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
General Education Category 3 and Program Requirement	MATH*132B	Statistical Methods: Biostatistics	4 credits
General Education Category 3 and Program Requirement	MATH*140 OR MATH*161	Precalculus OR Calculus I	4 credits
General Education Category 4 and Program Requirement	PHYS*111/PHYS*111L and PHYS*112/PHYS*112L OR PHYS*211/PHYS*211L and PHYS*212/PHYS*212L	General Physics I (with lab) and General Physics II (with lab) OR	10 credits OR 10 credits

		Analytical Physics I (with lab) and Analytical Physics II (with lab)	
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ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.

As an interdisciplinary major, the Cell Biology, Molecular Biology, and Biomedical Major does not require a minor. Biology and Chemistry minors may not be earned with this major.

BACHELOR'S DEGREE PROGRAM INFORMATION

Institution	Saginaw Valley State University
Degree/Program	Ecology, Evolution and Organismal Biology (B.S.)
Credits Required	124 credits (38 foundation credits – 38 require credits – 12 min elective credits)

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL*182 BIOL*182L	Intro to Cell and Molecular Biology Cell and Molecular Biology Lab	3 credits 1 credit
Organismal Biology	BIOL*181 BIOL*181L	Intro to Ecology, Evolution, Diversity/Ecology, Evolution, Diversity Lab	3 credits 1 credit
General Chemistry I	CHEM*111 CHEM*111L	General Chemistry I Lecture General Chemistry I Lab	4 credits 1 credit
General Chemistry II	CHEM*112 CHEM*112L	General Chemistry II Lecture General Chemistry II Lab	4 credits 1 credit
Organic Chemistry I	CHEM*230 CHEM*231	Organic Chemistry I Lecture Organic Chemistry I Lab	4 credits 1 credit
Organic Chemistry II	N/A	N/A	N/A

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
General Education Category 3 and Program Requirement	MATH*132B	Statistical Methods: Biostatistics	4 credits
General Education Category 4 and Program Requirement	PHYS*111 PHYS*111L	General Physics I General Physics I Lab	4 credits 1 credit
General Education Category 3 and Program Requirement	MATH*140 OR MATH*161	Precalculus OR Calculus I	4 credits
General Education Category 4 and Program Requirement	PHYS*106A OR PHYS*112	Earth & Space Science: Physical Geology OR General Physics II	4 credits

General Education Category 8 OR General Education Category 6 and Program Requirement	GEOG*201 OR GEOG*202	World Cultural/Regional Geography OR North America Regional Geography	3 credits
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ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.

A minor is required. Biology minors may not be earned with this major.

BACHELOR'S DEGREE PROGRAM INFORMATION

Institution	Saginaw Valley State University
Degree/Program	Environmental Science (B.S.)
Credits Required	124 credits (22 foundation credits – 52 required core credits – 13 elective credits – 6 field research experience credits)

MICHIGAN TRANSFER AGREEMENT (MTA)

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The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOL*182 BIOL*182L	Intro to Cell and Molecular Biology Cell and Molecular Biology Lab	3 credits 1 credit
Organismal Biology	BIOL*181 BIOL*181L	Intro to Ecology, Evolution, Diversity Ecology, Evolution, Diversity Lab	3 credits 1 credit
General Chemistry I	CHEM*111 CHEM*111L	General Chemistry I Lecture General Chemistry I Lab	4 credits 1 credit
General Chemistry II	CHEM*112 CHEM*112L	General Chemistry II Lecture General Chemistry II Lab	4 credits 1 credit
Organic Chemistry I	CHEM*230	Organic Chemistry I Lecture	4 credits
Organic Chemistry II	---	---	---

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
General Education Category 3 and Program Requirement	MATH*132B	Statistical Methods: Biostatistics	4 credits
General Education Category 3 and Program Requirement	MATH*140 OR MATH*161	Precalculus OR Calculus I	4 credits
Partial General Education Category 4 and Program Requirement	PHYS*111/PHYS*111L and PHYS*112/PHYS*112L OR PHYS*211/PHYS*211L and PHYS*212/PHYS*212L	General Physics I w/ Lab and General Physics II w/ Lab OR Analytical Physics I w/ Lab and Analytical Physics II w/ Lab	10 credits

General Education Category 4 and Program Requirement	PHYS*106A	Earth & Space Science: Physical Geology	4 credits
Program Requirement	BIOL*211	Botany	3 credits
General Education Category 4 and Program Requirement	GEOG*101	Intro to Physical Geography	3 credits

ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.

This is an interdisciplinary major and does not require a minor.

The Bachelor of Science in Environmental Science offers comprehensive training in a variety of disciplines including Biology, Chemistry, and Geography. Students will be prepared for careers with government agencies, non-profit organizations, and businesses, as well as for graduate studies. Required classes provide both a firm scientific foundation and an environmental context for the science. Additionally, the major is characterized with extensive hands-on field and laboratory experiences as well as a required internship. Several electives provide an opportunity for students to customize their degree.



BACHELOR'S DEGREE PROGRAM INFORMATION

Institution	Siena Heights University
Degree/Program	Bachelor of Science
Credits Required	120 sh

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 141	Basic Concepts of the Cell	4
Organismal Biology	BIO 241	Animal Biology	4
General Chemistry I	CHE 141	General Chemistry 1	4
General Chemistry II	CHE 142	General Chemistry 2	4
Organic Chemistry I	CHE 241	Organic Chemistry 1	4
Organic Chemistry II	CHE 242	Organic Chemistry 2	4

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	BIO 242	Plant Biology	4
Program Requirement	PHY 141	General Physics 1	4
Program Requirement	PHY 142	General Physics 2	4
Program Requirement	TSC 101	Fundamentals of Speech Communication	3

ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.

Click or tap here to enter text.

DEGREE PROGRAM INFORMATION

Institution	Spring Arbor University
Degree/Program	BA/BS: Biology, Environmental Biology, Biology Pre-med, Biology Secondary Teaching Certification
Credits Required	120

MICHIGAN TRANSFER AGREEMENT (MTA)

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The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 112	Introduction to Biology II	4
Organismal Biology	BIO 111	Introduction to Biology I	4
General Chemistry I	CHE 111	General Chemistry I	4
General Chemistry II	CHE 112	General Chemistry II	4
Organic Chemistry I	CHE 201	Organic Chemistry I	5
Organic Chemistry II	CHE 202	Organic Chemistry II	5
TOTAL CREDITS			26

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	HES/MAT/SWK/PSY 351	Statistics	3
Program Requirement	BIO 352	Microbiology	4
Program Requirement	BIO 263	Human Anat. And Physiol.	4
Program Requirement	BIO 281 or 362	Env. Science or Prin. Ecology	4
Program Requirement	BIO 206 or 321	Genes and Speciation or Parasitology	4
Program Requirement	BIO 330 or 345	Plant Organismal Biology or Cell/Mole.	4
TOTAL CREDITS			23

DEGREE PROGRAM INFORMATION

Institution	University of Detroit Mercy
Degree/Program	Bachelor of Science in Biology
Credits Required	126

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mitransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program around the state among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIO 1200, BIO 1210	General Biology I/Lab	5
Organismal Biology	BIO 1220, BIO 1230	General Biology II/Lab	5
General Chemistry I	CHM 1070/CHM 1100	General Chemistry I/Lab	4
General Chemistry II	CHM 1080/CHM 1120	General Chemistry II/Lab	4
Organic Chemistry I	CHM 2270/CHM 2250	Organic Chemistry I/Lab	4
Organic Chemistry II	CHM 2290/CHM 2260	Organic Chemistry II/Lab	4
TOTAL CREDITS			26

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Program Requirement	PHY 1300, PHY 1310	Physics I/Lab	4
Program Requirement	PHY 1320, PHY 1330	Physics II/Lab	4
Program Requirement	MTH 1400	Elementary Functions	3
Program Requirement	BIO 2900 or STA 2250	Biostatistics Statistics	3
TOTAL CREDITS			14

BACHELOR'S DEGREE PROGRAM INFORMATION

Institution	University of Michigan-Dearborn
Degree/Program	BS/Biology
Credits Required	120

MICHIGAN TRANSFER AGREEMENT (MTA)

The MiTransfer Pathways builds on the Michigan Transfer Agreement (MTA). The MTA allows transfer students to select designated courses to complete a minimum of 30 credit hours fulfilling MTA distribution requirements. Students following MiTransfer Pathway agreements should complete the MTA in accordance with the sending institutions' course designations and consider whether any recommended MiTransfer Pathways major-specific courses will "double count" to fulfill MTA distribution requirements in planning their transfer. More information about the MTA is available at www.mittransfer.org.

The MTA Mathematics distribution area allows students to complete one of three math pathways. The Biology MiTransfer Pathways faculty recommended that students complete a course in the Calculus pathway.

MiTRANSFER PATHWAYS COURSES

These courses are commonly agreed upon for transfer in this program among participating institutions.

Pathway Course	Subject/ Course Number	Course Title	Credit Hrs
Cell/Molecular Biology	BIOLOGY 140/140L	Intro Molec & Cellular Biology	4
Organismal Biology	BIOLOGY 130/130L	Intro Org & Environ Biology	4
General Chemistry I	CHEMISTRY 134/134L	General Chemistry 1A	4
General Chemistry II	CHEMISTRY 136/136L	General Chemistry IIA	4
Organic Chemistry I	CHEMISTRY 225	Organic Chemistry I	3
Organic Chemistry II	CHEMISTRY 226	Organic Chemistry II	3

REMAINING DEGREE REQUIREMENTS

These are required, recommended, or optional courses that transfer students could complete at a community college to fulfill degree requirements at the university/ receiving institution. Add additional lines as necessary.

General Education or Program Requirement	Subject/ Course Number	Course Title	Credit Hrs
Foreign Language	Foreign Language 101	Ancient Greek, Arabic, Armenian, French, German, Latin, Spanish, Chinese	4
Foreign Language	Foreign Language 102	Ancient Greek, Arabic, Armenian, French, German, Latin, Spanish, Chinese	4
Pre-Major	Physics 125/125L or Physics 150/150L	Introductory Physics I or General Physics I	4
Pre-Major	Physics 126/126L or Physics 151/151L	Introductory Physics II or General Physics II	4
Pre-Major	Math 116	Calculus II	4

ADVISING NOTES

Please indicate any advising notes for students following this transfer pathway at your institution.
Only one Organic Chemistry is required.

APPENDIX C:
MiTransfer Biology Pathway Course Equivalencies

Find live versions of each of these reports in the secure user area at www.mittransfer.org.

BIO MiTransfer Pathway Biology I Cell/Molecular	Central Michigan University	Eastern Michigan University	Eastern Michigan University	Ferris State University	Grand Valley State University	Michigan Technologic University	Michigan Technologic University	Northern Michigan University	Oakland University	Oakland University	Saginaw Valley State University	Saginaw Valley State University	University of Michigan- Dearborn	Andrews University	Concordia University Ann Arbor	Conestoga University	Davenport University	Davenport University	Florida University	Lawrence Technologic University	Lawrence Technologic University	Rochester University	Siena Heights University	Spring Arbor University	University of Detroit Mercy	University of Detroit Mercy	
By Receiving Institution	BIO 112	BIO 110	BIO 111	BIOL 121	BIO 120	BL 1200	BL 1210	BI 111	BIO 1200	BIO 1201	BIOL 181	BIOL 181L	BIO 140	BIOL 165	BIO 151	BIO 151	BIOL 110	BIOL 110L	BIOL 111	BIO 1213	BIO 1221	BIO 1014	BIO 141	BIO 112	BIO 1200	BIO 1210	
Community College																											
Alpena Community College	BIO 161	BIO 161	BIO 161	BIO 150 BIO 210 BIO 211 BIO 161 BIO 162	BIO 161 BIO 162 BIO 210 BIO 211	BIO 161	BIO 161	BIO 150 BIO 161	BIO 161 BIO 162 BIO 161		BIO 162	BIO 162		BIO 161 BIO 217	BIO 161	BIO 161	BIO 161	BIO 114 BIO 161	BIO 114 BIO 161	BIO 161	BIO 161	BIO 161	BIO 161	BIO 161	BIO 161	BIO 161	
Bay de Noc Community College	BIOL 112	BIOL 112	BIOL 112	BI 110 BI 112	BI 110 BI 220 BIOL 112 BIO 220 BIOL 200	BIOL 112	BIOL 112	BI 112 BIOL 110 BIOL 200	BIOL 112 BI 110 BIOL 112 BIOL 110		BIOL 110	BIOL 110		BIOL 112	BIOL 112	BIOL 112	BIOL 112	BIOL 104	BIOL 104	BIOL 112	BIOL 112	BIOL 112	BIOL 112	BIOL 112	BIOL 112	BIOL 112	
Delta College	BIO 171 BIO 171			BIO 171 BIO 172	BIO 111 BIO 111H BIO 130 BIO 171 BIOL 101 BIO 102 BIOL 104 BIOL 103 BIOL 111	BIO 171	BIO 171	BIO 171	BIO 171 BIO 171 BIO 172 BIO 171 BIO 172W		BIO 172	BIO 172		BIO 171		BIO 171	BIO 171	BIO 111W BIO 130W	BIO 111W BIO 130W		BIO 171 bio 172w		BIO 171 BIO 171		BIO 171	BIO 171	
Glen Oaks Community College	BIO 121	BIO 121	BIO 121	BIO 121 NSB 121 NSB 122	BIO 121 NSB 121 NSB 121	BIO 121	BIO 121	BIO 121 NSB 121	BIO 121 NSB 121 NSB 122 NSB 121 BIO 121 BIO 122	BIOL 122	BIOL 122	BIO 121		BIO 121 NSB 121	BIO 121 NSB 101	BIO 121	BIOL 121	BIOL 121	BIOL 121	BIOL 121	BIOL 121	BIOL 121	BIOL 121	BIOL 121	BIOL 121	BIOL 121	
Gogebic Community College	BIO 101	See Appendix D	See Appendix D	BIO 101 BIO 102	BIO 101 BIO 101	BIO 101	BIO 101	BIO 101	BIO 101 BIO 101 BIO 102	BIOL 102	BIOL 102	BIO 101	BIO 101 BIO 101	BIO 101	BIO 101	BIO 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	
Grand Rapids Community College	BI 151	BI 151	BI 151	BI 103 BI 104 BI 151 BI 151 BI 152 BI 151 BI 153 BI 154	BI 104 BI 103 BI 151 BI 104 BI 103 BI 104 BI 154 BI 153 BI 151 BI 151 BI 100	BI 151	BI 151	BI 103 BI 104 BI 151 BI 151	BI 151 BI 151 BI 152		BI 152	BI 152	BI 151	BI 151 BIO 101 BI 152	BI 151 BI 101 BI 103		BI 101 BI 151	BI 101 BI 151		BI 151	BI 151	BI 151	BI 151	BI 151	BI 151	BI 151	
Henry Ford College	BIO 152	BIO 152	BIO 152	BIO 141 BIO 143 BIO 150 BIO 152	BIO 131 BIO 152 BIO 150 BIO 152	BIO 152	BIO 152	BIO 152	BIO 152 BIO 153 BIO 150	BIOL 150	BIOL 150	BIO 150	BIO 152	BIO 152	BIO 131	BIO 152	BIO 131 BIO 152	BIO 131 BIO 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152	
Jackson College	BIO 162	BIO 162	BIO 162	BIO 131 BIO 151 BIO 152 BIO 131 BIO 151 BIO 151 BIO 231 BIO 232 BIO 151 BIO 152 BIO 161 BIO 162	BIO 131 BIO 151 BIO 152 BIO 131 BIO 161 BIO 131 BIO 231 BIO 232 BIO 151 BIO 152 BIO 161 BIO 162	BIO 162	BIO 162	BIO 131 BIO 162 BIO 232	BIO 131 BIO 162 BIO 161		BIOL 161	BIOL 161	BIO 162 BIO 162 BIO 161	BIO 162 BIO 161	BIO 132	BIO 162	BIOL 162	BIOL 162	BIOL 162	BIOL 162	BIOL 162	BIOL 162	BIOL 162	BIOL 162	BIOL 162	BIOL 162	BIOL 162
Kalamazoo Valley Community College	BIO 101	BIO 101	BIO 101	BIO 101 BIO 104	BIO 101	BIO 101	BIO 101	BIO 101	BIO 101 BIO 101 BIO 104	BIOL 104	BIOL 104	BIO 101	BIO 104 BIO 100 BIO 101 BIO 102	BIO 101 BIO 100	BIO 101	BIO 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	BIOL 101	
Kellogg Community College	BIOL 110	BIOL 110	BIOL 110	BIOL 109 BIOL 110 BIOL 111 BIOL 112	BIOL 110 BIOL 110 BIOL 110 BOL 110			BIOL 110 BIOL 111	BIOL 110 BIOL 109 BIOL 110	BIOL 109	BIOL 109	BIOL 110	BIOL 110 110A BIOL 110B BIOL 111A BIOL 111B		BIOL 110	BIOL 110	BIOL 110	BIOL 110	BIOL 110	BIOL 110	BIOL 110	BIOL 110	BIOL 110	BIOL 110	BIOL 109	BIOL 109	
Kirtland Community College	BIO 11700	BIO 10100 BIO 11700 BIO 11800	BIO 10100 BIO 11700 11800	BIO 10100 BIO 20100 BIO 20200 BIO 11700 BIO 11800	BIO 10100 BIO 11700 BIO 202 BIO 201 11700 BIO 20200 BIO 20100	BIO 117	BIO 117	BIO 11700 BIO 20100 BIO 20200	BIO 11700 BIO 11800 BIO 11700		BIO 11800	BIO 11800	BIO 11800	BIO 11700 BIO 11700	BIO 11700	BIO 11700	BIO 10100 BIO 10100	BIO 11700	BIO 10100	BIO 11700	BIO 11700	BIO 11700	BIO 11700	BIO 11700	BIO 10100 BIO 11700	BIO 10100 BIO 11700	
Lake Michigan College	BIOL 111 HONR 111	BIOL 111 HONR 111	BIOL 111 HONR 111	BIOL 111 BIOL 112 BIOL 102 HONR 112 BIOL 101 HONR 111 BIOL 111 HONR 111	BIOL 103 BIOL 111 BIOL 102 BIOL 103 BIOL 112 HONR 111 BIOL 111 HONR 111	BIOL 111	BIOL 111	BIOL 112 BIOL 112 BIOL 111 HONR 112 HONR 111	BIOL 111 HONR 111 BIOL 111 BIOL 111	BIOL 112	BIOL 112	BIOL 111	BIOL 112 HONR 111	BIOL 111	BIOL 111	BIOL 111	BIOL 101 BIOL 111 HONR 101 HONR 111	BIOL 101 BIOL 111 HONR 101 HONR 111	BIOL 111	BIOL 111	BIOL 111	BIOL 101	BIOL 111	BIOL 111	BIOL 111	BIOL 111	
Lansing Community College	BIOL 127	BIOL 127 BIOL 128	BIOL 127 BIOL 128	BIOL 127 BIOL 128	BIO 109 BIO 108 BIO 107 BIOL 121 BIOL 121 BIOL 127 BIOL 128 BIOL 127 BIOL 265 BIOL 260	BIOL 127	BIOL 127	BIOL 127	BIOL 127 BIOL 127 BIOL 127	BIOL 128	BIOL 128	BIOL 127	BIOL 128 BIOL 127	BIOL 127	BIOL 121 BIOL 125 BIOL 127 BIOL 145	BIOL 121 BIOL 145 BIOL 127 BIOL 145	BIOL 121 BIOL 127	BIOL 121 BIOL 127	BIOL 121 BIO 127	BIOL 121 BIO 127		BIOL 127	BIOL 127	BIOL 127	BIOL 127	BIOL 127	
Macomb Community College	BIOL 1000	BIOL 1000	BIOL 1000	BIO 101 BIOL 1000 BIOL 1010 BIOL 1000	BIO 120 BIO 110 BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIO 100 BIOL 1000 BIOL 1010 BIOL 1000 BIO 101 BIO 100	BIOL 1010 BIO 101 BIO 100	BIOL 1010	BIOL 1010	BIO 100 BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	BIOL 1000	
Mid Michigan College	BIO 111	BIO 111 BIO 112	BIO 111 BIO 112	BIO 101 BIO 201 BIO 203 BIO 111 BIO 112 BIO 201 BIO 203	BIO 101 BIO 111 BIO 111 BIO 112 BIO 111 BIO 111 BIO 111	BIO 111	BIO 111	BIO 111 BIO 101	BIO 111 BIO 111 BIO 112	BIOL 112	BIOL 112	BIO 111	BIO 111 BIO 111	BIO 111	BIO 111	BIO 111	BIO 101 BIO 111	BIO 101 BIO 111	BIO 111	BIO 111	BIO 111	BIO 111	BIO 111	BIO 111	BIO 111	BIO 111	
Monroe County Community College	BIOL 151	BIOL 151	BIOL 151	BIO 155 BIO 156 BIOL 151 BIOL 153	BIOL 151 BIOL 152	BIOL 151	BIOL 151	BIOL 151	BIOL 151 BIOL 153 BIOL 151	BIOL 153	BIOL 153	BIOL 151	BIOL 151	BIOL 151	BIOL 151	BIOL 151	BIOL 151	BIOL 151	BIOL 151	BIOL 151	BIOL 151	BIOL 151	BIOL 152 BIOL 151	BIOL 151	BIOL 151	BIOL 151	
Montcalm Community College	BIOL 121	BIOL 121	BIOL 121	BIOL 110 BIOL 115 BIOL 121 BIOL 122 NS 121 NS 122	BIOL 110 BIOL 115 BIOL 122 BIOL 121 NS 115 NS 110 NS 121 NS 122	BIOL 121	BIOL 121	BIOL 121	BIOL 121 BIOL 121 BIOL 122	BIOL 121	BIOL 121	BIOL 122	BIOL 121	BIOL 121	BIOL 121	BIOL 121	BIOL 100 BIOL 121	BIOL 100 BIOL 121					BIOL 1000 BIOL 121	BIOL 121	BIOL 121	BIOL 121	
Mott Community College	BIOL 111	BIOL 111	BIOL 111	BIOL 111 BIOL 111L BIOL 125 BIOL 125L BIOL 126 BIOL 126L	BIOL 111	BIOL 111	BIOL 111	BIOL 111	BIOL 111 BIOL 126 BIOL 111 BIOL 111 BIOL 125 BIOL 111 BIOL 112	BIOL 112	BIOL 112	BIOL 111	BIOL 111 BIOL 126 BIOL 111 BIOL 111 BIOL 112	BIOL 111	BIOL 111	BIOL 111 BIOL 111L BIOL 111L	BIOL 111	BIOL 111	BIOL 107 BIOL 111	BIOL 111	BIOL 111L	BIOL 111 111/111L	BIOL 111	BIOL 111	BIOL 111	BIOL 111	

BIO MiTransfer Pathway Biology II Oranienstein	Central Michigan University	Eastern Michigan University	Eastern Michigan University	Ferris State University	Grand Valley State University	Michigan Technologica l University	Michigan Technologica l University	Northern Michigan University	Oakland University	Saginaw Valley State University	Saginaw Valley State University	University of Michigan-- Dearborn	Andrews University	Concordia University Ann Arbor	Conestoga University	Davenport University	Davenport University	Finlandia University	Lawrence Technologica l University	Lawrence Technologica l University	Rochester University	Siena Heights University	Spring Arbor University	University of Detroit Mercy	University of Detroit Mercy
By Receiving Institution	BIO 111	BIO 120	BIO 121	BIO 122	BIO 121	BL 1100	BL 1110	BI 112	BIO 1300	BIO 182	BIO 182L	BIO 130	BIO 166	BIO 152	NO COURSE See Appendix D	BIO 111	BIO 111L	BIO 113	BIO 1223	BIO 1231	BIO 1024	BIO 241	BIO 111	BIO 1220	BIO 1230
Community College																									
Alpena Community College	BIO 162	BIO 162	BIO 162	BIO 150 BIO 211 BIO 161 BIO 162	BIO 151 BIO 210 BIO 211	BIO 162	BIO 162	BIO 162	BIO 162	BIO 161	BIO 161	BIO 162	BIO 162	BIO 162	NO COURSE See Appendix D	BIO 162	BIO 162	BIO 162	BIO 162	BIO 162	BIO 162	BIO 211	BIO 162	BIO 162	BIO 162
Bay de Noc Community College	BIO 110	BIO 110 BIO 202	BIO 110 BIO 202	BI 110 BI 112	BI 110 BI 200 BI 220 BIO 110 BIO 220 BIO 200	BIO 110	BIO 110	BI 110 BI 220 BIO 112 BIO 110 BIO 220	BIO 110	BIO 112	BIO 112	BIO 110	BIO 110	BIO 213	NO COURSE See Appendix D	BIO 110	BIO 110	BIO 110	BIO 110	BIO 110	BIO 110	BIO 202	BIO 110	See Appendix D	See Appendix D
Delta College	BIO 172W	BIO 172W	BIO 172W	BIO 171 BIO 172	BIO 172	BIO 172W	BIO 172W	BIO 172	BIO 172	BIO 171	BIO 171	BIO 172	BIO 172	BIO 172	NO COURSE See Appendix D	BIO 172W	BIO 172W	BIO 172W	bio 172w	BIO 172W	BIO 172W	BIO 172W	BIO 172	BIO 172	BIO 172
Glen Oaks Community College	BIO 122	BIO 122	BIO 122	BIO 121 BIO 122 NSB 121 NSB 122	BIO 122 BIO 122 NSB 122	BIO 122	BIO 122	BIO 122 NSB 122	BIO 122 NSB 122	BIO 121	BIO 121	BIO 122	BIO 122 NSB 122	BIO 122	NO COURSE See Appendix D	BIO 122	BIO 122	BIO 122	BIO 122	BIO 122	BIO 122	BIO 122	BIO 122	BIO 122 NSB 122	BIO 122 NSB 122
Gogebic Community College	BIO 102	See Appendix D	See Appendix D	BIO 101 BIO 102	BIO 102 BIO 102	BIO 102	BIO 102	BIO 102	BIO 102	BIO 101	BIO 101	BIO 102	BIO 102	BIO 105	NO COURSE See Appendix D	BIO 102	BIO 102	BIO 102	BIO 102	BIO 102	BIO 102	BIO 102	BIO 102	BIO 102	BIO 102
Grand Rapids Community College	BI 152	BI 152	BI 152	BI 103 BI 104 BI 151 BI 151 BI 152 BI 151 BI 151 BI 153 BI 154	BI 104 BI 103 BI 151 BI 103 BI 104 BI 104 BI 154 BI 153 BI 151 BI 152 BI 104 BI 153 BI 153 BI 154	BI 152	BI 152	BI 104 BI 103 BI 152	BI 152	BI 151	BI 151	BI 152	BI 152	BIO 152	NO COURSE See Appendix D	BI 152	BI 152	BI 152	BI 152	BI 152	BI 152	BI 152	BI 152	BI 152	BI 152
Henry Ford College	BIO 150	BIO 150	BIO 150	BIO 141 BIO 143 BIO 150 BIO 152	BIO 141 BIO 152 BIO 150 BIO 150 BIO 41 BIO 43	BIO 150	BIO 150	BIO 150	BIO 150	BIO 152	BIO 152	BIO 150 BIO 143 BIO 141	BIO 150	BIO 150	NO COURSE See Appendix D	BIO 130 BIO 150	BIO 130 BIO 150	BIO 150	BIO 150	BIO 150	BIO 150	BIO 143	BIO 150	BIO 150	BIO 150
Jackson College	BIO 161	BIO 161	BIO 161	BIO 131 BIO 151 BIO 152 BIO 131 BIO 152 BIO 131 BIO 231 BIO 232 BIO 151 BIO 152 BIO 161 BIO 162	BIO 151 BIO 131 BIO 152 BIO 162 BIO 152 BIO 231 BIO 232 BIO 151 BIO 152 BIO 161 BIO 162	BIO 161	BIO 161	BIO 161 BIO 231 BIO 161	BIO 161	BIO 162	BIO 162	BIO 161	BIO 161	BIO 161	NO COURSE See Appendix D	BIO 161	BIO 161	BIO 161	bio 161	bio 161	BIO 162	BIO 152 BIO 232 BIO 161	BIO 161	BIO 152 BIO 161 BIO 232	BIO 152 BIO 161 BIO 232
Kalamazoo Valley Community College	BIO 104	BIO 104	BIO 104	BIO 101 BIO 104	BIO 102 BIO 103 BIO 104	BIO 104	BIO 104	BIO 104	BIO 104	BIO 101	BIO 101	BIO 104	BIO 101 BIO 103	BIO 104	NO COURSE See Appendix D	BIO 104	BIO 104	BIO 104	BIO 104	BIO 104	BIO 104	BIO 104	BIO 102	BIO 104	BIO 104
Kellogg Community College	BIO 109	BIO 109	BIO 109	BIO 109 BIO 110 BIO 111 BIO 112	BIO 109 BIO 109 BIO 112 BIO 111	BIO 109	BIO 109	BIO 112	BIO 112	BIO 110	BIO 110	BIO 109	BIO 112B BIO 109 BIO 112C	BIO 109	NO COURSE See Appendix D	BIO 109	BIO 109	BIO 109	BIO 109	BIO 109	BIO 109	BIO 112 BIO 109	BIO 109	BIO 110	BIO 110
Kirtland Community College	BIO 10100 BIO 11800	BIO 11700 BIO 11800	BIO 11700 BIO 11800	BIO 10100 BIO 20100 BIO 20200 BIO 11800	BIO 11800 BIO 202 BIO 201 BIO 20200 BIO 20100		BIO 118	BIO 118	BIO 11800 BIO 20100 BIO 20200	BIO 11700	BIO 11700	BIO 11700	BIO 11800	BIO 10100	NO COURSE See Appendix D	BIO 11800	BIO 11800	BIO 11800	bio 11800	bio 11800	BIO 10100	BIO 20100	BIO 11800	See Appendix D	See Appendix D
Lake Michigan College	BIO 112	BIO 112 HONR 112	BIO 112 HONR 112	BIO 111 BIO 112 HONR 111 HONR 112 BIO 112 HONR 111	BIO 103 BIO 101 BIO 112 BIO 102 HONR 112 HONR 112 HONR 111	BIO 112	BIO 112	BIO 112 BIO 111 BIO 112 HONR 112 HONR 111	BIO 112	BIO 111	BIO 111	BIO 112	BIO 112 BIO 103	Biology 112	NO COURSE See Appendix D	BIO 112 HONR 112	BIO 112 HONR 112	BIO 112	bio 112	bio 112	BIO 112	BIO 103	BIO 112	BIO 112	BIO 112
Lansing Community College	BIO 128	BIO 127 BIO 128 BIO 128 BIO 260 BIO 265	BIO 127 BIO 128 BIO 128 BIO 260 BIO 265	BIO 127 BIO 128 BIO 128 BIO 107 BIO 127 BIO 128 BIO 265 BIO 260	BIO 109 BIO 108 BIO 127 BIO 128 BIO 127 BIO 128 BIO 265 BIO 260	BIO 128	BIO 128	BIO 128	BIO 128	BIO 127	BIO 127	BIO 128	BIO 128	BIO 128	NO COURSE See Appendix D	BIO 128	BIO 128	BIO 128	BIO 128	BIO 128	BIO 128	BIO 265	BIO 128 BIO 201	BIO 128	BIO 128
Macomb Community College	BIO 1010	BIO 1010	BIO 1010	BIO 100 BIO 1000 BIO 1010 BIO 1010	BIO 101 BIO 120 BIO 110 BIO 1010	BIO 1010	BIO 1010	BIO 1010	BIO 101 BIO 1010 BIO 1010 BIO 1000 BIO 101 BIO 100	BIO 1000	BIO 1000	BIO 101 BIO 1010	BIO 1010	BIO 1010	NO COURSE See Appendix D	BIO 1010	BIO 1010	BIO 1010	BIO 1010	BIO 1010	BIO 1010	BIO 1010	BIO 1010	BIO 101 BIO 1010	BIO 101 BIO 1010
Mid Michigan College	BIO 112	BIO 111 BIO 112	BIO 111 BIO 112	BIO 101 BIO 201 BIO 203 BIO 111 BIO 112 BIO 201 BIO 203	BIO 112 BIO 203 BIO 201 BIO 102 BIO 201 BIO 203	BIO 112	BIO 112	BIO 112	BIO 112	BIO 111	BIO 111	BIO 112	BIO 112	BIO 138	NO COURSE See Appendix D	BIO 112	BIO 112	BIO 112	BIO 112	BIO 112	BIO 112 BIO 203	BIO 203	BIO 112	BIO 101	BIO 101
Monroe County Community College	BIO 153	BIO 153	BIO 153	BIO 155 BIO 156 BIO 151 BIO 153	BIO 153	BIO 153	BIO 153	BIO 153	BIO 153 BIO 153 BIO 151	BIO 151	BIO 151	BIO 153 BIO 251 BIO 252	BIO 153	BIO 153	NO COURSE See Appendix D	BIO 153	BIO 153	BIO 153	BIO 153	BIO 153	BIO 153	BIO 252	BIO 153	BIO 153	BIO 153
Montcalm Community College	BIO 122	BIO 122	BIO 122	BIO 110 BIO 115 BIO 121 BIO 122 NS 121 NS 122	BIO 110 BIO 115 BIO 122 BIO 121 NS 115 NS 110 NS 121 NS 122	BIO 122	BIO 122	BIO 122	BIO 122	BIO 121	BIO 121	BIO 121	BIO 122	BIO 122	NO COURSE See Appendix D	BIO 122	BIO 122	BIO 122	BIO 122	BIO 122	BIO 122	BIO 115	BIO 122	BIO 122	BIO 122
Mott Community College	BIO 112	BIO 112	BIO 112	BIO 111L BIO 125 BIO 126 BIO 126L	BIO 125 BIO 126	BIO 112	BIO 112	BIO 125	BIO 112 BIO 125 BIO 126 BIO 111 BIO 125 BIO 111 BIO 112	BIO 111	BIO 111	BIO 125 BIO 126	BIO 112	BIO 150	NO COURSE See Appendix D	BIO 107	BIO 107	BIO 107	bio 125L bio 126 bio 1 126L BIO 112	bio 125 bio 125L bio 126 bio 1 126L BIO 112L	BIO 112 BIO 107/107L	BIO 125 BIO 112	BIO 107	BIO 125 BIO 125	

Muskegon Community College	BIOL 104 BIOL 131&L			BIOL 103 BIOL 104 BIOL 10A BIOL 10D BIOL 10E BIOL 10F	BIOL 104L&L BIOL 10H BIOL 10B BIOL 10A BIOL 10C BIOL 10D BIOL 10E BIOL 10F	BIOL 104L&L BIOL 131&L	BIOL 104L&L BIOL 131&L	BIOL 104 BIOL 131	BIOL 104 BIOL 104L&L BIOL 131L&L BIOL 104 BIOL 103 BIOL 10D BIOL 10A BIOL 10C BIOL 10D BIOL 10E BIOL 10F	BIOL 130	See Appendix D	BIOL 103 BIOL 103 BIOL 131				bio 104 BIOL 131&L	BIOL 104L BIOL 131&L									
		BIOL 131&L	BIOL 131&L		BIOL 10G BIOL 10E BIOL 10B BIOL 10C BIOL 10D BIOL 10H BIOL 10C BIOL 10D BIOL 10J BIOL 10B BIOL 10C BIOL 131&L	BIOL 151 BIOL 152	BIOL 152	BIOL 152	BIOL 152 BIOL 152 BIOL 151	BIOL 151		BIOL 152 BIOL 152 BIOL 116 BIOL 115	BIOL 152	BIOL 152	BIOL 152	NO COURSE See Appendix D	BIOL 104	BIOL 104	BIOL 104		BIOL 104L&L BIOL 131&L	BIOL 104 BIOL 131&L	BIOL 104L&L	BIOL 104	BIOL 104	
North Central Michigan College	BIO 152	BIO 152	BIO 152	BIO 151 BIO 152	BIO 151 BIO 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152 BIO 152 BIO 151	BIOL 151	BIOL 151	BIOL 152 BIO 152 BIO 116 BIO 115	BIOL 152	BIOL 152	BIOL 152	NO COURSE See Appendix D	BIO 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152	BIOL 152	
Northwestern Michigan College	BIOL 116 BIO 116L			BIOL 115 BIO 116 BIO 116 BIO 116L BIO 116L SMBI 110 SMBI 111 SMBI 112 SMBI 113 SMBI 114 SMBI 115	BIOL 116L BIO 116 BIO 116L BIO 116 BIO 116 BIO 116 SC 112 SC 111 SC 113	BIOL 116	BIOL 116	BIOL 116		BIOL 115	BIOL 115		BIOL 116 BIO 116	BIOL 116	BIOL 116	NO COURSE See Appendix D	BIOL 116		BIOL 116		BIOL 116L BIO 116L BIO 116L	BIOL 116 BIO 116L BIO 116L		BIOL 116 BIO 116L	BIOL 116 BIO 116L	
		BIO 116	BIO 116L			BIOL 116	BIOL 116	BIOL 116					BIOL 116	BIOL 116	BIOL 116		BIOL 116	BIOL 116	BIOL 116			BIOL 116 BIO 116L		BIOL 116 BIO 116L	BIOL 116 BIO 116L	
Oakland Community College	BIO 1560	BIO 1560	BIO 1560	BIOL 153 BIO 1530 BIO 1560	BIOL 155 BIO 154 BIO 1550 BIO 1540 BIO 1560 BIO 1560	BIOL 1560	BIOL 1560	BIOL 1560	BIOL 1560 BIO 1530 BIO 1560	BIOL 1530	BIOL 1530		BIOL 1560 BIO 155 BIO 154	BIOL 1560	BIOL 1560	NO COURSE See Appendix D	BIO 1560	BIOL 1560	BIOL 1560	BIOL 1560	BIOL 1560	BIOL 1560	BIOL 154 BIO 2540	BIOL 1560	BIOL 1560	BIOL 1560
Schoolcraft College	BIOL 130	BIOL 130	BIOL 130	BIOL 120 BIOL 130 BIOL 211 BIOL 212	BIOL 101 BIOL 102 BIOL 130 BIOL 132 BIOL 131	BIOL 130	BIOL 130	BIOL 130	BIOL 102 BIOL 130 BIOL 130 BIOL 120	BIOL 120	BIOL 120	BIOL 102 BIOL 130	BIOL 130	BIOL 130	BIOL 130	NO COURSE See Appendix D	BIOL 130	BIOL 130	BIOL 130	BIOL 130	BIOL 130	BIOL 130 BIOL 211	BIOL 130	BIOL 130	BIOL 130	BIOL 130
Southwestern Michigan College	BIOL 102	BIOL 102	BIOL 102	BIOL 101 BIOL 102	BIOL 102 BIOL 101 BIOL 102 BIOL 212 BIOL 211	BIOL 102	BIOL 102	BIOL 102	BIOL 102 BIOL 101	BIOL 101	BIOL 101	BIOL 102 BIOL 101	BIOL 102	BIOL 102	BIOL 102	NO COURSE See Appendix D	BIOL 102	BIOL 102	BIOL 102	BIOL 102	BIOL 102	BIOL 102	BISC 111 BIOL 102	BIOL 102	BIOL 102	BIOL 102
St. Clair County Community College	BIO 121	See Appendix D	See Appendix D	BIOL 100 BIO 200 BIO 250 BIO 200 BIO 250	BIOL 121 BIO 200 BIO 250	BIOL 121	BIOL 121	BIOL 121 BIO 200	BIOL 121 BIO 200 BIO 121 BIO 121 BIO 100	BIOL 120	BIOL 120	BIOL 120	BIOL 121	BIOL 121	BIOL 121	NO COURSE See Appendix D	BIO 121	BIOL 121	BIOL 121 BIO 100	bio 121	bio 121	BIOL 121 BIO 200 BIO 250	BIOL 121	BIOL 121	BIOL 121	
Washtenaw Community College				BIOL 101 BIO 103 BIO 161 BIO 162	BIOL 128 BIO 127 BIO 161 BIO 227 BIO 228 BIO 227 BIO 228 BIO 228 BIO 227		BIOL 161	BIOL 161	BIOL 161 BIO 161 BIO 162		BIOL 162		BIOL 103 BIO 161 BIO 228 BIO 227	BIOL 161 BIO 103		NO COURSE See Appendix D	BIOL 161		BIOL 161		BIOL 103 BIO 161 BIO 227 BIO 161		BIOL 103 BIO 162	BIOL 103 BIO 162		
	BIO 161	BIO 161	BIO 161			BIOL 161	BIOL 161	BIOL 161			BIOL 162	BIOL 162		BIOL 161	BIOL 161		BIOL 161		BIOL 161					BIOL 103 BIO 162	BIOL 103 BIO 162	
Wayne County Community College District	BIO 165 BIO 175	See Appendix D	See Appendix D	BIOL 155 BIO 165 BIO 175 BIO 170 BIO 171	BIOL 178 BIO 165 BIO 105 BIO 175 BIO 175	See Appendix D	See Appendix D	BIOL 165 BIO 175	BIOL 165 BIO 175 BIO 155 BIO 165 BIO 175	BIOL 155	BIOL 155	BIOL 178 BIO 165	BIOL 175	BIOL 240	NO COURSE See Appendix D	BIOL 175	BIOL 175	BIOL 175	bio 165 bio 175	bio 165 bio 175	See Appendix D	BIOL 175	BIO 165/175	BIOL 175	BIOL 175	
West Shore Community College	BIOL 122	See Appendix D	See Appendix D	BIOL 122 BIOL 123 MBIO 123	BIOL 123 MBIO 123	BIOL 123	BIOL 123	MBIO 122 MBIO 123	BIOL 123 MBIO 122 MBIO 123 MBIO 123 BIOL 123 BIOL 122	BIOL 122	BIOL 122	BIOL 122	BIOL 123	BIOL 123	NO COURSE See Appendix D	BIOL 123	BIOL 123	BIOL 123	BIOL 123	BIOL 123	MZOO 220 ZOO 220		BIOL 122	MBIO 123 MBIO 123	MBIO 123	

APPENDIX D:
MiTransfer Biology Pathway Course Equivalency Exceptions

Find Excel versions of Appendix D at www.mittransfer.org.

BIOLOGY

Course	College/University	Community College	Explanation
Biology I (Cell, Molecular)	EASTERN MICHIGAN UNIVERSITY	GOGEBIC COMMUNITY COLLEGE	Syllabus under review
Biology I (Cell, Molecular)	EASTERN MICHIGAN UNIVERSITY	MUSKEGON COMMUNITY COLLEGE	Syllabus under review
Biology I (Cell, Molecular)	EASTERN MICHIGAN UNIVERSITY	ST. CLAIR COUNTY COMMUNITY COLLEGE	Syllabus under review
Biology I (Cell, Molecular)	EASTERN MICHIGAN UNIVERSITY	WAYNE COUNTY COMMUNITY COLLEGE DISTRICT	No syllabus to review; Accepted to satisfy major requirements
Biology I (Cell, Molecular)	SAGINAW VALLEY STATE UNIVERSITY	MUSKEGON COMMUNITY COLLEGE	The labs are not in alignment for learning outcomes or objectives.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	ALPENA COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	BAY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	DELTA COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	GLEN OAKS COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	GOGEBIC COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	GRAND RAPIDS COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	HENRY FORD COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	JACKSON COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	KALAMAZOO VALLEY COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	KELLOGG COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	KIRTLAND COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	LAKE MICHIGAN COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	LANSING COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.

Biology II (Organismal)	CORNERSTONE UNIVERSITY	MACOMB COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	MID MICHIGAN COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	MONROE COUNTY COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	MONTCALM COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	MOTT COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	MUSKEGON COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	NORTH CENTRAL MICHIGAN COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	NORTHWESTERN MICHIGAN COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	OAKLAND COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	SCHOOLCRAFT COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	SOUTHWESTERN MICHIGAN COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	ST. CLAIR COUNTY COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	WASHTENAW COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	WAYNE COUNTY COMMUNITY COLLEGE DISTRICT	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	CORNERSTONE UNIVERSITY	WEST SHORE COMMUNITY COLLEGE	No course. Community college course transfers in as elective credit.
Biology II (Organismal)	EASTERN MICHIGAN UNIVERSITY	GOGEBIC COMMUNITY COLLEGE	Syllabus under review
Biology II (Organismal)	EASTERN MICHIGAN UNIVERSITY	ST. CLAIR COUNTY COMMUNITY COLLEGE	Syllabus under review
Biology II (Organismal)	EASTERN MICHIGAN UNIVERSITY	WAYNE COUNTY COMMUNITY COLLEGE DISTRICT	No syllabus to review; Accepted to satisfy major requirements
Biology II (Organismal)	EASTERN MICHIGAN UNIVERSITY	WEST SHORE COMMUNITY COLLEGE	Syllabus under review
Biology II (Organismal)	MICHIGAN TECHNOLOGICAL UNIVERSITY	WAYNE COUNTY COMMUNITY COLLEGE DISTRICT	WCCCD - BIO 165, Botany, will transfer as MTU - BL 2160, Botany, instead of Organismal Biology

Biology II (Organismal)	ROCHESTER UNIVERSITY	WAYNE COUNTY COMMUNITY COLLEGE DISTRICT	WCCCD - BIO 165, Botany, will transfer as Rochester University - BIO 2224
Biology II (Organismal)	SAGINAW VALLEY STATE UNIVERSITY	MUSKEGON COMMUNITY COLLEGE	The labs are not in alignment for learning outcomes or objectives.
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	ALPENA COMMUNITY COLLEGE	BIO162 is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	BAY COLLEGE	BIOL 110 is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	GRAND RAPIDS COMMUNITY COLLEGE	BI 152 course is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	HENRY FORD COLLEGE	BIO 150 course is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	KIRTLAND COMMUNITY COLLEGE	BIO11800 course is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	LAKE MICHIGAN COLLEGE	BIO112 course is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	LANSING COMMUNITY COLLEGE	BIO 128 course is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	MID MICHIGAN COLLEGE	BIO112 course is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	MONROE COUNTY COMMUNITY COLLEGE	BIOL 153 course is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	MONTCALM COMMUNITY COLLEGE	BIO122 course is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	OAKLAND COMMUNITY COLLEGE	BIO1560 course is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	ST. CLAIR COUNTY COMMUNITY COLLEGE	BIO121 Course is not in alignment with BIO 241 course
Biology II (Organismal)	SIENA HEIGHTS UNIVERSITY	WEST SHORE COMMUNITY COLLEGE	BIO123 course is not in alignment with BIO241 course
Biology II (Organismal)	UNIVERSITY OF DETROIT MERCY	BAY COLLEGE	UDM course covers evolution and anatomy/physiology and Bay's course does not
Biology II (Organismal)	UNIVERSITY OF DETROIT MERCY	KIRTLAND COMMUNITY COLLEGE	UDM course covers evolution and anatomy/physiology and Kirtland's course does not
Organic Chemistry I	FERRIS STATE UNIVERSITY	GLEN OAKS COMMUNITY COLLEGE	CHEM 210 at Glen Oaks is equivalent to our CHEM 214 and is not equivalent to our CHEM 321.
Organic Chemistry II	FERRIS STATE UNIVERSITY	GLEN OAKS COMMUNITY COLLEGE	CHEM 211 has been reviewed and is not a direct equivalency to CHEM 322 at Ferris. Glen Oaks does not have an equivalency to the CHEM 321 course at Ferris, which is the class prior to this one in the sequencing of courses.