Academic Senate
Agenda for the Meeting of
April 26, 2016
UCB 202A
10:00 - 11:00 am Session

1. Call to Order and Roll Call

2. Approval of Minutes
   A. April 5, 2016 minutes

3. Open Forum

4. Reports
   A. Senate President – Khagendra Thapa
   B. Senate Vice President – Charles Bacon
   C. Senate Secretary – Melinda Isler

5. Committee Reports
   A. University Curriculum Committee – Kemi Fadayomi
   B. General Education Task Force – Clifton Franklund
   C. Student Government –

6. Old Business
   A. Graduate Admissions Policy – Wancour

7. New Business
   A. Closure of Bachelor of Arts in BIOL - Fadayomi

8. Announcements

   A. FSU President - David Eisler
   B. Provost – Paul Blake
   C. Senate President – Khagendra Thapa

9. Open Forum

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Academic Senate
Academic Senate
Agenda for the Meeting of
April 26, 2016
UCB 202A 11:00 -11:50 am Session

1. Call to Order and Roll Call

2. Open Forum

3. New Business

   A. Election of Officers for 2016-2017 Academic Year – Senator Rumpf

4. Open Forum

5. Adjournment

Minutes
Ferris State University
Academic Senate Meeting

March 5, 2016

Members in Attendance: Alspach, Bacon, C., Bacon, M., Bajor, Balanda, Berghoef, Brecken, Briggs, Bright, Cronk, Daubert, Drake, Epps, Fadayomi, Fagerman, Foulk, Fox, Gray, Hancock, Hanna, Isler, Jenerou, Klatt, Lewis, Mattis, Piercey, Richmond, Rumpf, Thapa, Todd, Wagenheim, Wancour, Zyla
Members absent with cause: Dinardo, Maike, Zimmer
Members absent: None
Ex Officio and Guests: Adeyanju, Blake, Damari, Durst, Eisler, Garrison, Nicol, Pilgrim, Reifert, Teahen, Cluchey, Marion, Maixner, Colley, Bishop, Owens, Dood, Franklund, Carrie, Ing, Karafa, Cluchey, Schmidt, Franklund, Cliff, Topcu, Prakasam, Haneline

1.	President Thapa called the meeting to order at 10:05 a.m.
2.	**Approval of Minutes.** Senator Baran moved to approve the minutes. Senator Berghoef seconded. The motion passed.
3.	**Open Forum.** Senator Alspach noted that there would be a Special Olympics event on April 21, 2016 and encouraged all to participate.
4.	**Officer Reports/Provost Report.** President Thapa recognized Sharon Colley from the Nursing program as the winner of the 2016 Distinguished Teacher Award. He also recognized Social Work faculty member (and Senator) Mike Berghoef as the winner of the International Educator award. Vice-President Bacon discussed a document sent in the packet that the union created proposing the faculty role in determining faculty credentials. This issue has come up because of a change in the accreditor rules. He is seeking comments. Senator Briggs asked what resources are available for this. Vice-President Bacon noted that was still something to figure out. Provost Blake said he is also aware of this issue and strongly encourages faculty participation as they work to determine a process. Secretary Isler thanked Senators for her patience in Administrative Assistant Paula Hadley's absence.
5.	**Committee Reports** UCC Chair Kemi Fadayomi noted the committee has been working on a series of proposals including the review of programs with changes to the checksheets as part of the MyDegree review. Vice-President Chantell Wooten noted a series of upcoming events including the debate for the new presidential candidates. She also noted that they have recently replaced the head of the finance division. Other events include the Big Event, Beyond Globalization (co-sponsored with Office of International Education) and Pancakes with the President. General Education coordinator Cliff Franklund said he has completed the membership on subcommittees and the mapping has been completed and then sent back to the colleges for unit review. Once this process is completed, it will be returned to the registrar and scribed in MyDegree. Elections Chair Jim Rumpf noted the elections were successfully completed, including a run-off election in the College of Engineering Technology and College of Pharmacy. Raw data is available to all senators from the Academic Senate office upon request.
6A	**Old Business. Academic Program Review Revitalization Task Force Proposal.**

	Secretary Bacon moved to remove the proposal from the table. Senator Piercey seconded. Motion passed. Secretary Isler noted the exact wording of the proposal was included in the packet. Senator Piercey spoke on behalf of Senator Zimmer who could not attend the meeting to express her concern that this task force was not necessary as the new Provost was addressing implementation issues and they just needed more members of the committee. Senator Fagerman expressed some support over the revised wording but suggested a friendly amendment of the following. 3. Timely implementation back to the APRC of non-program recommendations and general recommendations." Secretary Isler asked prior to accepting the amendments for reaction from current APRC members. Chair Wagenheim and Senator Todd said the wording would not answer concerns to the motion was rejected as a friendly amendment. A vote was taken to amend the wording which also failed. Senator Berghoef commented that the purpose of recruiting committee members was a responsibility not of a task force, but rather of the vice-president. Senator Klatt expressed support for the good working relationship between the Provost's Office and Academic Affairs and questioned the need for the Task Force. Motion failed.
6B	**Old Business**. **Graduate Probation Dismissal Policy.** Secretary Isler moved to create a task force to revitalize Academic Program Review. Seconded by Senator Piercey. Secretary Isler noted this motion came out of the executive board because of some questions which had come up at various points this year about how to increase the vitality of the process. APR Chair/Senator Matt Wagenheim expressed concern about task forces coming out of an email from another faculty member and a meeting that did not include him. Senator Todd supported this. Senator Piercey noted there was no meeting, and the email in question was only a series of questions, which the e-board was not well enough informed to make specific suggestions to improve things. Wagenheim noted this appeared duplicative of the work of the committee which includes process improvement recommendations which the senate votes on every year. There was also request for more exact wording of the motion. Senator Alspach made a motion to table. Motion to table passed.
6C	**Old Business**. **Graduate Admission Policy.** Vice-President Bacon moved to remove the motion from the table. Senator Berghoef seconded. Secretary Isler noted the policy included with the packet was not the correct version. She moved to table the motion until the next meeting when correct language was available. Senator Fagerman seconded. Motion tabled.
7A	**Charter Revision Language.** Secretary Isler moved to approve the charter language changes. Seconded by Senator Piercey. Isler explained this language helps to address a issue created by previous charter changes. EIO was eliminated as a unit and added to the non-tenure track group without additional representation numbers being added. Senator Alspach noted that the total number of senators would still decrease by one. Senator Mary Bacon noted if they were proportionally represented in the same ratio of tenure-track faculty members they would actually have 5-6 additional members. Senator Rumpf added if the 100 members in the group were all full time? Senator Bacon said yes. Senator Bacon asked why only 1 additional member instead of 2. Senator Wancour said it was a suggested number but an amendment could be made to make it two. Senator Balanda spoke of the issue of faculty governance not divided by union contracts, but rather by a common mission to develop programs. Why did it matter if they were non-tenure track? Senator Lewis also felt in his graduate program it would be very beneficial to allow adjuncts to be included. Senator Alspach also added her support of non-tenure track representing the program as they do over half of the teaching load. Senator Hanna asked Senator Bacon if those 100 members were divided up by college where would they be placed. Senator Bacon said over 80% in Arts and Sciences. Senator Hanna noted that this with the current language would not address the problem of giving EIO another representative and could easily end up as an additional Arts and Sciences representative. Senator Fadayomi agreed. The motion passed.
7B	**New Degree- Associate in Arts in Psychology** Chair Fadayomi moved to approve the new Associates of Arts in Psychology. Senator Alspach seconded. Senator Gray noted the objections in the packet about the value of this degree. Senator Fadayomi noted this was largely done to assist students to receive Tuition Incentive grants. Motion passed.
7C	**Redirection of Current Offering- BSN Pre-Licensure Program** Chair Fadayomi moved to approve the redirection of the BSN Pre-Licensure program. Senator Zyla seconded. Program Coordinator Susan Owens was present to answer questions. Senator Briggs asked some questions

	about proposed savings. Coordinator Owens explained by reducing the number of clinical hours, less time for clinical faculty would be needed. Motion passed.
8.	**Announcements.** President Eisler reported that there were a number of events going on the campus. In the previous weekend he attended the Relay for Life, 25th Anniversary Hospitality Management gala, and 30th Anniversary of the Professional Tennis Management program. The legislative budget process continues and the House proposal is approximately 800,000 le ss. It is currently in committee. There is some language which will cap MSPERS costs for universities (not staff) and thought is being given on how to fund the Tuition Incentive Program. Provost Blake asked all those who could to attend the Deans candidate events in the upcoming weeks.
9.	**Open Forum.** Library Dean Garrison noted that Nick Shockey from the Scholarly Publishing and Research Coalition will be on campus April 12th and giving a presentation on open access. International Education Director Piram Prakasam encouraged all to come to the International Festival of Cultures event. Senator Fadayomi noted that Ferris would be hosting the Equity in the Classroom Conference in 2017 and she was a co-chair Senator Gray noted the Conference on Aging was being hosted on campus April 8th and 9th.
11.	The meeting was adjourned at 11:23 a.m.

Respectfully submitted,

Melinda Isler, Secretary

TO: All Persons Represented by the Academic Senate

FROM: Jim Rumpf, Senate Elections Chair

SUBJECT: Senate Election Results

DATE: **April 20, 2016**

The following people from the indicated colleges and librarian/counselor units were elected to the Senate:

Health Professions	Susan Wancour
Arts & Sciences	Paul Klatt, Peter Balanda, Mischelle Stone, Kemi Fadayomi
Business	David Marion, James Shimko
Education and Human Services	Liza Ing
Pharmacy	Tie – Rose Baran/Gregg Potter
Engineering Technology	Gary Todd, Chuck Drake, Gary Maike, tie for 4th seat Paul Long/David Hanna
Librarians/Counselors	Mark VanLent
Optometry	Amy Dinardo

The tally on the following pages indicates the number of votes received by each candidate and write-in candidates.

On behalf of the Academic Senate, we appreciate and thank all those who assisted with this election.

JR:ph

Health Professions – 1 vacancy	**Total Votes**
Susan Wancour	24
Write-ins:	
None	
ARTS & SCIENCES – 4 vacancies	
Paul Klatt	44
Peter Balanda	39
Mischelle Stone	37
Kemi Fadayomi	36
Kristin Conley	26
Write-ins:	
Jana Pisani	1
John Caserta	1
COUNSELORS/LIBRARIANS – 1 vacancy	
Mark VanLent	12
Write-ins:	
None	
BUSINESS – 2 vacancies	
David Marion	21
James Shimko	21
Write-ins:	
Steve Lyman	1
EDUCATION – 1 vacancy	
Liza Ing	7
Write-ins:	
Glen Okonoski	1
Greg Vanderkooi	1
Leonard Johnson	1
Mike Mendenhall	1
Vanessa Wyss	1
Anyone but OMG	1
PHARMACY – 1 vacancy	
Rose Barron	11
Gregg Potter	11
Write-ins:	
None	
ENGINEERING TECHNOLOGY – 4 vacancies	
Gary Maike	30
David Hanna	27

Gary Todd	34
Chuck Drake	30
Paul Long	27
Write-ins:	
Dan Wanink	1
Ken Kuk	1
OPTOMETRY – 1 vacancy	
Amy Dinardo	2
Write-ins:	
Josh Lotoczky	1
Vandana Rajaram	1

TO: All Persons Represented by the Academic Senate

FROM: Jim Rumpf, Senate Elections Chair

SUBJECT: Senate Election Tie Breaker Results – College of Engineering Technology and College of Pharmacy

DATE: **April 20, 2016**

The following people from the indicated colleges and librarian/counselor units were elected to the Senate:

Pharmacy	Rose Baran
Engineering Technology	David Hanna

The tally on below indicates the number of votes received by each candidate.

On behalf of the Academic Senate, we appreciate and thank all those who assisted with this election.

JR:ph

PHARMACY – 1 vacancy	**Votes**
Rose Baran	13
Gregg Potter	12
ENGINEERING TECHNOLOGY – 1 remaining seat	
David Hanna	19
Paul Long	16

ACADEMIC SENATORS 2016-2017

	College/Unit	Last Name	First Name	Office	Ext.	Committee Assignment
1.	**Allied Health**	Epps	Antionette (1)	VFS 409	2266	International Education Committee
2.		Zyla	Emily (1)	VFS 318	2275	Professional Development Committee
3.		**Wancour**	**Susan (2)**	**VFS 312**	**2398**	**Senate E-board, Policy & Standards**
4.	**Arts & Sciences**	Alspach	Sandra (1)	JOH 127	2779	Athletic Advisory Committee
5.		Berghoef	Michael (1)	ASC 2108	2765	Past President Gen Ed Task Force
6.		Gray	John Scott (1)	JH 119	3515	
7.		**Piercey**	**Victor (1)**	**ASC 2021**	**2823**	**University Curriculum Committee, E-board Member**
8.		**Bacon**	**Charles (1)**	**ASC 3019**	**2586**	**Student Life Committee, Senate Vice President**
9.		Foulk	Rachel (1)	JH 124	2776	Library/Historical/Archival Committee
10.		Klatt	Paul (2)	ASC 2004	2671	Faculty Research Committee
11.		Zimmer	Beth (1)	ASC 2120	5022	Academic Program Review Council
12.		Balanda	Peter (2)	ASC 3012	5870	Academic Policy and Standards Committee
13.		Stone	Mischelle (2)	ASC 2108	3782	
14.		Fadayomi	Kemi (2)	ASC 2009	5628	University Curriculum Committee
15.	**Business**	Mattis	Ted (1)	BUS 343	2766	
16.		Marion	David (2)	BUS 342	3164	
17.		Bajor	Larry (1)	IRC 212B	3153	Professional Development Committee
18.		Briggs	Lianne (1)	WCO 106	2384	
19.		Cronk	Dan (1)	BUS 124C	3053	
20.		Shimko	James (2)	IRC 212Q	3157	
21.	**Counselors/**	VanLent	Mark (2)	BHC 210	5968	
22.	**Librarians**	**Isler**	**Melinda (1)**	**FLT 358**	**3731**	**Senate E-board, University Grad & Professional Council**
23.	**Education**	Lewis	Russell (1)	BIS 514	3581	Senate Parliamentarian
24.		Ing	Liza (2)	BIS 410	5362	Graduate and Professional Council
25.	**Optometry**	Jenerou	Alison (1)	MCO 231	2179	Athletic Advisory Committee
26.		**Dinardo**	**Amy (2)**	**MCO 231**	**2202**	**Senate E-board**
27.	**Non-tenure Track Inst. Faculty (Fall Election)**	Fox	Bernadette (1)	ASC 3025	2522	Arts and Lectures Committee
28.		Bacon	Mary (1)	ASC 3019	2586	Library/Historical/Archival Committee
29.	**Pharmacy**	Baran	Rosalie	PHR G	616-463-1134	Student Life Committee
30.		Hancock	Kim (1)	PHR 301	2234	Athletic Advisory Committee
31.		Bright	David (12)	PHR 202B	2231	
32.	**Engineering Technology**	Drake	Chuck (2)	SWN 405	2788	Student Life Committee
33.		Hanna	David (2)	GRN 227	2788	
34.		Rumpf	Jim (1)	SWN 108	3591	
35.		**Thapa**	**Khagendra (1)**	**SWN 314**	**2672**	**Senate President**
36.		Todd	Gareth (2)	JOH 309	5041	Academic Program Review Council /Radiation Safety Comm.
37.		Maike	Gary (2)	HEC 203	2816	Professional Development Committee

Bold = Current Senate Officer

FERRIS STATE UNIVERSITY
GRADUATE PROGRAM ADMISSIONS POLICY

Following are the admissions requirements for graduate level programs. These are the minimum guidelines, and individual programs may have additional requirements.

I. Regular Admission Requirements:

A. Submission of all required admission materials, including:
   1. A completed application (students who are not citizens or permanent residents should apply as international students)
   2. Receipt by the FSU Admissions Office of official transcripts from all institutions of higher education previously attended, sent directly from those institutions to FSU or, where applicable, to a program specific application clearing house.
   3. TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing System) scores, sent directly from the testing agency, for students whose first (native) language is not English.

B. Baccalaureate degree from an accredited college or university with a minimum 3.0 grade point average (GPA), except where program specific early admission opportunities are afforded.

C. Minimum English proficiency test score for students whose first (native) language is not English: TOEFL 550 (paper-based), 213 (computer-based), 79 (internet-based); or IELTS 6.5.

D. Additional program specific requirements may exist, such as:
   1. Requirement that undergraduate coursework be done within the United States or Canada
   2. Master degree in field of study with 3.0 minimum graduate GPA
   3. Entrance exam (PCAT, OAT, GRE, MAT, GMAT, etc.)
   4. Specific pre-requisite courses with minimum course grades
   5. Minimum GPA for a sub-set of prerequisite courses
   6. Higher minimum GPA, TOEFL or IELTS requirements
   7. Early admission opportunities
   8. References
   9. Writing sample(s)
   10. Interviews
   11. C.V. or resume
   12. Application fee

II. Provisional Admission Requirements

Students failing to meet the minimum requirements for regular graduate admission may be granted provisional admission at the program's discretion. Students granted provisional admission will be granted regular admission if, after a designated period, they have met the program requirements. Examples of provisional admission include:

A. an undergraduate GPA of less than 3.0 will qualify for regular admission provided they successfully complete nine (9) semester hours of graduate work with a 3.0 GPA or higher.

B. undergraduate deficiencies will qualify for regular admission provided they clear any deficiencies in his/her undergraduate education before nine (9) semester hours of graduate work have been completed.

C. TOEFL scores between 500-549 (paper-based), 173-212 (computer-based), 60-78 (internet-based); or IELTS 6.0 will qualify for regular admission if, they enroll in and successfully complete recommended ESL courses and/or retake and receive a passing score on TOEFL or IELTS exam.

III. Special Enrollment Requirements:

Special enrollment is intended for students who are not planning to become candidates for a graduate degree at Ferris State University. Special enrollment will be permitted only on a semester-by-semester basis, subject to program approval.

#16-128

MAR 29 2016

Form A

Effective Fall 2015

PROPOSAL SUMMARY AND ROUTING FORM

Proposal Title: Biology and Biotechnology Programs and Cell/Molecular Biology Minor Curriculum Cleanup

Initiating Individual: Bradley Isler **Initiating Department or Unit**: Biological Sciences

Contact Person's Name: Bradley Isler **Email:** Bradleyisler@ferris.edu **Phone:** 231-591-2641

☐ **Group I-A** – New Degree, major, concentration, minor, or redirection of a current offering

☒ **Group I-B** – Deletion of a degree, major, concentration, or minor

☒ **Group II-A** – New Course, modification of a course, deletion of a course

☒ **Group II-B** – Minor Curriculum Clean-up

☐ **Group III** – Certificate (☐ College Credit ☐ Non-credit ☐ New Certificate)

☐ **Group IV** – Other site location (☐ College Credit ☐ Non-credit)

	PLEASE PRINT AND SIGN YOUR NAME	DATE	VOTE/ACTION * Number Count
Program Representative **	christopher westerkamp	2-10-15	✓ 5 Support __ Support with Concerns __ Not Support __ Abstain
Department/School/Faculty Representative Vote **	christopher westerkamp	2-12-15	✓ 18 Support __ Support with Concerns __ Not Support __ Abstain
Department/School Administrator	Joseph Lyon	3/21/16	X Support __ Support with Concerns __ Not Support __ Abstain
College Curriculum Committee/Faculty	John Scott Gray	3-31-16	5 Support __ Support with Concerns __ Not Support 1 Abstain (conflict of interest)
UCC Representative	Olukemi Fadayomi.		✓ Support __ Hold __ Not Support
Dean	TRINIDY WILLIAMS	4/12/16	__ Support X Support with Concerns __ Not Support __ Abstain
University Curriculum Committee **			__ Support __ Support with Concerns __ Not Support __ Abstain
Senate **			__ Support __ Support with Concerns __ Not Support __ Abstain
Academic Affairs			__ Support __ Hold __ Not Support

* Support with Concerns or Not Support must include identification of specific concern with appropriate rationale.

** Number Count must be given for all members present and/or voting.

To be completed by Academic Affairs Date of Implementation:

President (Date Approved Board of Trustees (Date Approved) Academic Officers of MI (Date Approved)

1. Proposal Summary: (Summary is generally less than one page. Briefly state what is proposed with a summary of rationale and highlights)

This proposal will cover minor changes to several major and minor programs and concentrations within the biology department:

1) Closure of the Bachelor of Arts in Biology (BIOL) program. The BA Biology program was originally created for students that wished to pursue a career where a foundation in the biological sciences beyond that obtained with a biology minor but less than that obtained with a BS in Biology was helpful. The number of students enrolled in this program has been zero for several years, as more efficient degree options (such as the Bachelor of Integrative Studies) have been developed. Because students that traditionally enrolled in this program now have other options for degree completion, we propose the closure of the BA Biology program. There are no courses specific to the BA Biology program, so the closure of this program will not require any changes in course offerings.
2) An increase in the transfer requirements for students entering biology programs and concentrations – increase to 2.5 GPA. Currently, the biology department requires students have a minimum 2.0 GPA to transfer into biology programs from other programs at Ferris. This is one of the lowest transfer GPA requirements for any program at Ferris State. In addition, an analysis of success and graduation data for students transferring into biology programs with a GPA of 2.0-2.5 shows that, once in a biology program, these students have a greater failure rate in BIOL courses, a poorer completion rate of program all requirements, and a slower time to graduation. We propose an increase in the transfer GPA requirement for biology programs and concentrations from 2.0 to 2.5. This is the minimum transfer GPA of many Ferris programs from which the biology department commonly sees transfers, especially those in the College of Health Professions.
3) An increase in the ACT requirement for admission into biology programs and concentrations – increase of composite or MATH ACT to 20. Currently, 19 is the minimum allowable score on the composite ACT or MATH ACT subsection for students to enter directly into a biology program. Students with a score of 18 or below are admitted with pre-science as their primary program and their biology program/concentration as their secondary program. Once these students pass entry level MATH/READ requirements, they are moved from pre-science as their primary program to their selected biology program/concentration. Students with a 19 or greater on the composite or MATH ACT are currently admitted directly into a biology program/concentration. An analysis of success and graduation data for students that score a 19 on their ACT compared to students that score 20 or above shows that these students have a greater failure rate for entry level MATH courses, BIOL 121/122, and CHEM 121/122. These students also have a poorer completion rate and slower time to graduation. There is a large difference in success data for students that score 19 or below versus those that score 20 or better on the ACT. From these data, we believe that students that score a 19 on the ACT more closely resemble those that score 18 or below in terms of their advising needs. Therefore, we propose to increase the minimum composite/MATH ACT score required for direct admission to biology programs to 20. Following this change, students that score a 19 on the composite or MATH ACT will be admitted with their primary program as pre-science and their projected biology program/concentration as their secondary program, as students that score an 18 or below on their ACT currently are. Even though these students will be enrolled as pre-science students, they will be advised by professional advisors within the biology department, as other newly enrolled students.
4) An increase in MATH requirements for the Bachelor of Science in Biotechnology (BIOT) program. The BIOT program currently only requires MATH 130 (Advanced Algebra & Analytical Trigonometry). This has always presented a problem for the 50% of BIOT graduates that proceed to graduate school, as many graduate programs require at least one undergraduate calculus course for admission (for these students, we always advised completion of Calculus I at Ferris). The MATH 130 requirement was placed in the BIOT program many years ago during a time when Calculus I was only offered as a 5 credit course. With a the reconfiguring of calculus courses that occurred several years ago and the reduction of MATH 220 (Analytical Geometry - Calculus 1) to a 4 credit course, there is now room in the BIOT curriculum to include MATH 220. The increase of MATH requirements also fits well with many of the Bachelor of Science in Biology concentrations and the Pre-Pharmacy requirements, which have also increased their MATH requirements to MATH 220.
5) A minor cleanup of the cell and molecular biology (CMB) minor – removal of BIOL 121 and 122 and addition of BIOL 370 and BIOL 475. While the CMB minor is open to interested students of any major, the course catalog entry for this minor currently states that the "Cell and Molecular Biology is also suitable for students who may choose to pursue a bachelor's degree in chemistry, especially one with an emphasis in biochemistry". As the curriculum for the cell and molecular biology minor is currently constructed, students in the BIOC program are unable to pursue a cell and molecular biology minor because 12 of the 21 credits in this minor (57%) are also in the BIOC major. Per Ferris State requirements for academic minors, students may use no more than 33% of the credits in a minor to fulfill specific requirements for a major. To allow BIOC students to pursue a cell and molecular biology minor, we propose the deletion of BIOL 121 and BIOL 122 and the addition of BIOL 370 and BIOL 475 to the minor. This will result in the cell and molecular biology minor requiring a minimum of 20 credits, of which only 3 credits (15%) will also be included in the BIOC major. The removal of BIOL 121 and

122 will not significantly affect material covered in the CMB curriculum, as these courses are already required for the BIOC major.

6) Prerequisite change for BIOL 370 (Developmental Biology) - delete BIOL 122 and add BIOL 375. Currently, the only prerequisite for BIOL 370 is BIOL 122. In the past, BIOL 370 was taught with a strong focus on the morphology of development. Over the past 20 years, the field of developmental biology has evolved to have a much stronger focus on molecular processes, especially with respect to the relationship between gene expression and morphological changes during development. To match the evolution in the field of developmental biology, course material within BIOL 370 has also evolved to include far more molecular developmental biology. The increased focus on genetics and molecular biology in BIOL 370 requires students to have a greater understanding of molecular processes than is covered in BIOL 122. The removal of BIOL 122 and addition of BIOL 375 (which is a foundational course in genetics required by all biology majors) will aid the preparation of students for the discussion of modern molecular developmental biology as is presented in BIOL 370. The change in prerequisite from BIOL 122 to BIOL 375 will not result in the loss of any background information for students enrolling in BIOL 370, as BIOL 122 is a prerequisite for BIOL 375.
7) The correction of course catalog entries for the following courses - term offered: BIOL 101, BIOL 103, BIOL 109, BIOL 111, BIOL 116, BIOL 121, BIOL 122, BIOL 286, BIOL 300, BIOL 340, BIOL 348, BIOL 373, BIOL 421, and BIOL 475.
8) The correction of catalog entries for BIOL 121, BIOL 300, and BIOL 373 – previously approved prerequisite changes. Previously approved curriculum proposals outlined a change in prerequisites for BIOL 121 (from CHEM 114/121 to CHEM 121), BIOL 300 (from BIOL 205/322 & CHEM 124/214/321 to BIOL 205/322 & CHEM 214/321), and BIOL 373 (from BIOL 122 & CHEM 124/214/322 to BIOL 122 & CHEM 214/322). These previously approved curriculum proposals did not result in a change in the catalog entry for prerequisite for BIOL 121, BIOL 300, or BIOL 373.
9) The deletion of the following courses from the course catalog: BIOL 113 and BIOL 206. These courses are no longer offered by the biology department and there are no plans for these courses to be offered in the future. The deletion of these courses will not affect the progression of students through any of the programs contained within the biology department.
10) Minor cleanup of errors on the check sheets for several biology concentrations:
    a. BIBS, BIPP, BIPV, BIPT, BIPO, BIPM, BIPD - Correction of course prefix for the following biology application course: CAHS 160 changed to COHP 160.
    b. BIPO - Correction for number of credits required for Supporting Sciences (36-37 changed to 35-36) and Electives (12-13 credits changed to 13-14)

2. Summary of Curricular Action (Check all that apply to this proposal)

☐ Degree ☒ Major ☒ Minor ☒ Concentration ☐ Certificate ☒ Course

☐ New ☒ Modification ☒ Deletion

Name of Degree, Major, etc.: BIOT, BIBS, BIPP, BIOL, BIPO, BIEB, BIPM, BIPT, BIFB, BIPD, BIPV, Cell and Molecular Biology (CMB) minor

3. Summary of All Course Action Required:

A. Newly Created Courses to be Added to the Catalog

Prefix	Number	Title

B. Courses to be Deleted from FSU Catalog

Prefix	Number	Title
BIOL	113	Basic Botany
BIOL	206	Advanced Human Physiology

C. Existing Courses to be Modified

Prefix	Number	Title
BIOL	101	Genetics: Human Aspects
BIOL	103	Biological Concepts
BIOL	109	Basic Human Anatomy/Physiology

BIOL	111	Environmental Biology
BIOL	116	Nature Study
BIOL	121	General Biology 1
BIOL	122	General Biology 2
BIOL	286	General Microbiology
BIOL	300	Pathophysiology
BIOL	340	Evolution
BIOL	348	Animal Behavior
BIOL	370	Developmental Biology
BIOL	373	Cell Biology
BIOL	421	Endocrinology
BIOL	475	Bioinformatics

D. Addition of existing FSU courses to program

(BIOT)

Prefix	Number	Title
MATH	220	Analytical Geometry - Calculus I

(CMB Minor)

Prefix	Number	Title
BIOL	370	Developmental Biology
BIOL	475	Bioinformatics

E. Removal of existing FSU courses from program

(BIOT)

Prefix	Number	Title
MATH	130	Advanced Algebra & Analytical Trigonometry

(CMB Minor)

Prefix	Number	Title
BIOL	121	General Biology 1
BIOL	122	General Biology 2

4. Summary of All Consultations

Form Sent (B or C)	Date Sent	Responding Department	Date Received & By Whom

5. Will External Accreditation be sought? (For new programs or certificates only)

☐ Yes ☐ No

If yes, name the organization involved with accreditation for this program.

6. Is a PCAF required? ☐ Yes ☒ No Is the PCAF approved? ☐ Yes ☐ No (If yes, supply link on Academic Affairs website where PCAF is posted.)

7. Program Checksheets affected by this proposal (Check all that apply to this proposal)

☒ Add Course ☒ Delete Course ☐ Modify Course ☒ Change Prerequisite ☐ Move from required to elective
☐ Move from elective to required ☐ Change Outcomes and Assessment Plan ☐ Change Credit hours

8. List all Checksheets affected by this proposal:

College	Department	Program
Arts and Sciences	Biological Sciences	Bachelor of Science Biotechnology (BIOT)
Arts and Sciences	Biological Sciences	Bachelor of Science Biology (BIBS)
Arts and Sciences	Biological Sciences	Bachelor of Science Biology/Pre-Medicine (BIPM)
Arts and Sciences	Biological Sciences	Bachelor of Science Biology/Pre-Physical Therapy (BIPT)
Arts and Sciences	Biological Sciences	Bachelor of Science Biology/Pre-Optometry (BIPO)
Arts and Sciences	Biological Sciences	Bachelor of Science Biology/Forensic Biology (BIFB)
Arts and Sciences	Biological Sciences	Bachelor of Science Biology/Pre-Dentistry (BIPD)
Arts and Sciences	Biological Sciences	Bachelor of Science Biology/Pre-Veterinary (BIPV)
Arts and Sciences	Biological Sciences	Bachelor of Science Biology/Environmental Biology (BIEB)

Arts and Sciences	Biological Sciences	Bachelor of Science Biology/Pre-Pharmacy (BIPP)
Arts and Sciences	Biological Sciences	Cell and Molecular Biology Minor (CMB)
Arts and Sciences	Biological Sciences	Bachelor of Arts Biology (BIOL)

FERRIS STATE UNIVERSITY
COLLEGE OF ARTS AND SCIENCES

Memorandum

To: University Curriculum Committee

From: Trinidy Williams, College of Arts and Sciences Acting Assistant Dean

cc: Joseph Lipar, Biology Department Chair

Date: April 12, 2016

Re: Biology and Biotechnology Programs and Cell/Molecular Biology Minor Curriculum Cleanup

---

I support the Biology and Biotechnology Programs and Cell/Molecular Biology Minor Curriculum Cleanup with concerns. My concerns stem from several missing assessment plans where both the current and proposed assessment plan are missing. These nine courses, listed below, include both general education and upper-level courses.

BIOL 111
116
121
122
286
300
340
348
370
421
475

820 Campus Drive
Big Rapids, MI 49307-2225

Phone: (231) 591-3660
Fax: (231) 591-2618
Web: www.ferris.edu

CURRICULUM CONSULTATION FORM

FORM B
Effective Fall 2015

To be completed by each department affected by the proposed change, addition, or deletion. Potential duplication of coursework is reason for consultation.

1. This completed form must be forwarded with the proposal to the administrator of the department to be consulted.
2. The department must respond within 10 business days of receipt of this form to ensure inclusion in the final proposal. The completed original is returned to the Academic Senate Office to be inserted into the proposal and a copy is returned to the initiator.

   The department must acknowledge receipt of this form and the proposal in writing to the Initiator.

   Failure to respond by 10 business days of receipt of this form is interpreted as support for the proposal.
3. The Proposing Department must address any concerns raised by the consulted department. This response must be in writing and will be included in the proposal following the original consultation form.

RE: Proposal Title

Initiator(s): Bradley Isler

Proposal Contact: 231-591-2641 **Date Sent:** 2-25-16

Department: Biological Sciences **Campus Address:** ASC 2004, 820 Campus Drive
(Please type)

Responding Department: Physical Sciences

Administrator: Date Received: Date Returned:

Based upon department faculty review on (Date) we:

- ☐ Support the above proposal.
- ☐ Support the above proposal with the modifications and concerns listed below.
- ☐ Do not support the proposal for the reasons listed below.

Comment regarding the impact this proposal has on current curriculum including prerequisites, scheduling, room assignments, and/or faculty load for your department. Use additional pages, if necessary.

CURRICULUM CONSULTATION FORM

FORM B
Effective Fall 2015

To be completed by each department affected by the proposed change, addition, or deletion. Potential duplication of coursework is reason for consultation.

1. This completed form must be forwarded with the proposal to the administrator of the department to be consulted.
2. The department must respond within 10 business days of receipt of this form to ensure inclusion in the final proposal. The completed original is returned to the Academic Senate Office to be inserted into the proposal and a copy is returned to the initiator.

   The department must acknowledge receipt of this form and the proposal in writing to the initiator.

   Failure to respond by 10 business days of receipt of this form is interpreted as support for the proposal.
3. The Proposing Department must address any concerns raised by the consulted department. This response must be in writing and will be included in the proposal following the original consultation form.

RE: Proposal Title

Initiator(s): Bradley Isler

Proposal Contact: 231-591-2641 **Date Sent:** 2-25-16

Department: Biological Sciences **Campus Address:** ASC 2004, 820 Campus Drive
(Please type)

Responding Department: Mathematics
Administrator: Date Received: 2/25/16 Date Returned: 2/26/16

Based upon department faculty review on (Date) we:

- ☑ Support the above proposal.
- ☐ Support the above proposal with the modifications and concerns listed below.
- ☐ Do not support the proposal for the reasons listed below.

Comment regarding the impact this proposal has on current curriculum including prerequisites, scheduling, room assignments, and/or faculty load for your department. Use additional pages, if necessary.

FLITE SERVICES CONSULTATION FORM

Form C
Effective Fall 2015

To be completed by the liaison librarian and approved by the Dean of FLITE. FLITE must return the original form to the Academic Senate office to be inserted in the proposal and a copy to the initiator. FLITE must respond within 10 business days of receipt of this form to ensure that the form is included in the final proposal.

Failure to respond by 10 business days of receipt of this form is interpreted as support for the proposal.

RE: Proposal Title: Biology and Biotechnology Programs and Minor Curriculum Cleanup

Projected number of students per year affected by proposed change: 320

Initiator(s): Bradley J Isler
Proposal Contact: 231-591-2641 Date Sent:

Department: Biological Sciences **Campus Address: ASC 2004, 820 Campus Drive**
(Please type)

Liaison Librarian Signature: [signature] **Date Received:** 2/25/2016

Dean of FLITE Signature: [signature] **Date Returned:** 2/29/16

Based upon our review on (date) , FLITE concludes that:

- [x] Library resources to support the proposed curriculum change are currently available.
- [ ] Additional Library resources are needed but can be obtained from current funds.
- [ ] Support, but significant additional Library funds/resources are required in the amount of $_.
- [ ] Does not support the proposal for reasons listed below.

Comment regarding the impact this proposal will have on library resources, collection development, or other FLITE programs. Use additional pages if necessary.

ID: Name: **Form D - Current**

BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY

Jenice Winowiecki PHONE: (231) 591-2555 OFFICE: ASC 3024 E-MAIL: wino2@ferris.edu or
Kim Ducat PHONE: (231) 591-2745 OFFICE: ASC 3085 E-MAIL: duca1@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

Graduation Requirements:

1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. or B.A. degree in Biology from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering Biology Fall Semester 2014

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credit	Grade
MAJOR – 36 Credit Hours Required					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL*	205	Human Anatomy and Physiology	(CHEM 114 or CHEM 121)	5	
	or 321/322	Human Physiology and Anatomy 1 & 2	(BIOL 122 & CHEM 122)	8	
	or 453	Plant Physiology	(BIOL 122 & BIOL 350)	4	
BIOL	218 or	Microbial Ecology	(BIOL 121)	3	
	286 or	General Microbiology	(CHEM 122)	3	
	386	Microbiology and Immunology	(BIOL 322 & CHEM 214 or 321)	5	
BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	346 or	Ecological Assessment	(BIOL 122)	3	
	347 or	Environmental Conservation	(BIOL 122)		
	442	Ecology	(BIOL 122)		
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 & Sr. Standing)	2	
BIOL Electives (300 level or above) for a total of 36 credits in BIOL courses (see next page).				7 - 13	
SUPPORTING SCIENCES - 24-37 Credit Hours Required (MATH 120 minimum; Minimum of 17 credits in CHEM courses, including biochemistry; Minimum of 4 credits in PHYS courses).**					
MATH	120	Trigonometry	(MATH 115 or by placement)	3	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	214 or	Fundamentals of Organic Chemistry	(CHEM 122)	4	
	321/322	Organic Chemistry 1 & 2	(CHEM 122)	10	
CHEM	324 or	Fundamentals of Biochemistry	(CHEM 214)	3	
	364	Biochemistry	(CHEM 322)	4	
PHYS	130 or	Concepts in Physics	(MATH 110)	4	
	211/212 or	Introductory Physics 1 & 2	(MATH 120)	8	
	241/242	General Physics 1 & 2	(MATH 220)	10	
Other courses in Physics may be used to satisfy the requirements in this area. Consult your advisor.					
BIOLOGY APPLICATION AREA - 5 Credit Hours Required (Consult your advisor). Additional courses in Biology may satisfy this requirement. See next page for list of commonly used classes.					

ELECTIVES – 13-26 Credit Hours of courses to reach the minimum of 121 credits required for this degree.				

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
Foundation		
200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with advisor):

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 472	Proteins	3
BIOL 301	Exercise Physiology	3	BIOL 370	Developmental Biology	4	BIOL 473	Proteins Laboratory	3
BIOL 310	Nutrition	3	BIOL 373	Cell Biology	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 330	Zoology	4	BIOL 407	Forensic DNA Analysis	3	BIOL 475	Bioinformatics	3
BIOL 340	Evolution	3	BIOL 421	Endocrinology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 343	Ornithology	3	BIOL 423	Neurobiology	3	BIOL 485	Biological Research	1-9
BIOL 344	Entomology	3	BIOL 453	Plant Physiology	4	BIOL 490	Special Topics in Biology	3-4
BIOL 345	Environmental Regulations	3	BIOL 470	Molecular Genetics	4	BIOL 492	Biology Internship	1-9
BIOL 348	Animal Behavior	3	BIOL 471	Recombinant DNA Lab	3	BIOL 497	Independent Study	1-6
BIOL 349	Medical Parasitology	3						

Application Area (Consult with advisor): Any of the Biology electives above may be used. Other common classes taken include

CAHS 160	Nutrition for Healthy Living	3	MATH 251	Statistics for the Life Sciences	3	MRIS 102	Orientation to Med Vocab	1 or
EDPE 338	Biomechanics	3	RMLS 122	Responding to Emergencies	2	MRIS 103	Medical Terminology	4

*Credit toward the degree cannot be earned in both BIOL 205 and BIOL 321/322.

** Courses in ASTR, GEOG, and GEOL may also satisfy the supporting sciences requirement.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Proposed**

BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY

Jenice Winowiecki PHONE: (231) 591-2555 OFFICE: ASC 3024 E-MAIL: wino2@ferris.edu or
Kim Ducat PHONE: (231) 591-2745 OFFICE: ASC 3085 E-MAIL: duca1@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA.

Graduation Requirements:

1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. Biology degree from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering Biology Fall Semester 2015

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credit	Grade
MAJOR – 36 Credit Hours Required					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL*	205	Human Anatomy and Physiology	(CHEM 114 or CHEM 121)	5	
	or 321/322	Human Physiology and Anatomy 1 & 2	(BIOL 122 & CHEM 122)	8	
	or 453	Plant Physiology	(BIOL 122 & BIOL 350)	4	
BIOL	218 or	Microbial Ecology	(BIOL 121)	3	
	286 or	General Microbiology	(CHEM 122)	3	
	386	Microbiology and Immunology	(BIOL 322 & CHEM 214 or 321)	5	
BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	346 or	Ecological Assessment	(BIOL 122)	3	
	347 or	Environmental Conservation	(BIOL 122)		
	442	Ecology	(BIOL 122)		
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 & Sr. Standing)	2	
BIOL Electives (300 level or above) for a total of 36 credits in BIOL courses (see next page).				7 - 13	
SUPPORTING SCIENCES* - 24-37 Credit Hours Required (MATH 120 minimum; Minimum of 17 credits in CHEM courses, including biochemistry; Minimum of 4 credits in PHYS courses).**					
MATH	120	Trigonometry	(MATH 115 or by placement)	3	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	214 or	Fundamentals of Organic Chemistry	(CHEM 122)	4	
	321/322	Organic Chemistry 1 & 2	(CHEM 122)	10	
CHEM	324 or	Fundamentals of Biochemistry	(CHEM 214)	3	
	364	Biochemistry	(CHEM 322)	4	
PHYS	130 or	Concepts in Physics	(MATH 110)	4	
	211/212 or	Introductory Physics 1 & 2	(MATH 120)	8	
	241/242	General Physics 1 & 2	(MATH 220)	10	
Other courses in Physics may be used to satisfy the requirements in this area. Consult your advisor.					
BIOLOGY APPLICATION AREA - 5 Credit Hours Required (Consult your advisor). Additional courses in Biology may satisfy this requirement. See next page for list of commonly used classes.					

ELECTIVES – 13-26 Credit Hours of courses to reach the minimum of 121 credits required for this degree.				

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/genced/courses.html**

A. COMMUNICATION COMPETENCE	**12 Sem Credits**	
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING	**7 Sem Credits**
This requirement is achieved in the program major.	

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT	**9 Sem Credits**	
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS	**9 Sem Credits**	
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
Foundation		
200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with advisor):

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 472	Proteins	3
BIOL 301	Exercise Physiology	4	BIOL 370	Developmental Biology	4	BIOL 473	Proteins Laboratory	3
BIOL 310	Nutrition	3	BIOL 373	Cell Biology	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 330	Zoology	4	BIOL 407	Forensic DNA Analysis	3	BIOL 475	Bioinformatics	3
BIOL 340	Evolution	3	BIOL 421	Endocrinology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 343	Ornithology	3	BIOL 423	Neurobiology	3	BIOL 485	Biological Research	1-9
BIOL 344	Entomology	3	BIOL 453	Plant Physiology	4	BIOL 490	Special Topics in Biology	3-4
BIOL 345	Environmental Regulations	3	BIOL 470	Molecular Genetics	4	BIOL 492	Biology Internship	1-9
BIOL 348	Animal Behavior	3	BIOL 471	Recombinant DNA Lab	3	BIOL 497	Independent Study	1-6
BIOL 349	Medical Parasitology	3						

Application Area (Consult with advisor): Any of the Biology electives above may be used. Other common classes taken include

COHP 160	Nutrition for Healthy Living	3	MATH 251	Statistics for the Life Sciences	3	MRIS 102	Orientation to Med Vocab	1 or
EDPE 338	Biomechanics	3	RMLS 122	Responding to Emergencies	2	MRIS 103	Medical Terminology	4

*Credit toward the degree cannot be earned in both BIOL 205 and BIOL 321/322.

** Courses in ASTR, GEOG, and GEOL may also satisfy the supporting sciences requirement.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Current**

ENVIRONMENTAL BIOLOGY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. Paul Klatt
PHONE: (231) 591-2671 OFFICE: ASC 2114 E-MAIL: klattp@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one degree in Biology (either B.S. or B.A.) from Ferris State University.

Number of 300+ Credits:

Program Requirements: Effective for students entering Environmental Biology Fall Semester 2014

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR –38 Credit Hours Required					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 and CHEM 121)	4	
BIOL	218	Microbial Ecology	(BIOL 121)	3	
BIOL	330	Zoology	(BIOL 122)	4	
BIOL	350	Plants and Fungi	(BIOL 122)	4	
BIOL	343 or 344 or 348	Ornithology Entomology Animal Behavior	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	453	Plant Physiology	(BIOL 122 & BIOL 350)	4	
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 and Sr. Standing)	2	
BIOL	492	Biology Internship		1 – 6	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
Biology Elective: Choose one 300+ BIOL elective. The following courses are recommended. An additional course from among BIOL 346/347/442 may also be taken.					
BIOL	340 or 345	Evolution Environmental Regulations	(BIOL 122) (BIOL 122)	3	
SUPPORTING SCIENCES – 28-40 Credit Hours Required					
MATH	130	Advanced Algebra/Analytical Trigonometry	(MATH 120 or by placement)	4	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	214 or 321/322	Fundamentals of Organic Chemistry Organic Chemistry 1 & 2	(CHEM 114 or CHEM 121) (CHEM 122)	4 10	
CHEM	324 or 364	Fundamentals of Biochemistry Biochemistry	(CHEM 214) (CHEM 322)	3 4	
PHYS	130 or 211/212	Concepts in Physics Introductory Physics 1 & 2	(MATH 110) (MATH 120)	4 8	
GEOL	121 or 131	Physical Geology Geology and Land Use Management		4 3	
BIOLOGY APPLICATION AREA – 6 Credit Hours Required					
MATH	251	Statistics for the Life Sciences	(MATH 130)	3	
GISC or GEOG	225 311	Principles of Geographic Information Systems Social Implications of Geographic Information Systems	(Basic Computer Skills) (Jr. Standing)	3	

ELECTIVES – 7-19 Credit Hours of courses to reach the minimum of 121 credits required for this degree.				

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog:

http://www.ferris.edu/htmls/academics/gened/courses.html

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
Foundation		
200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Proposed**

ENVIRONMENTAL BIOLOGY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. Paul Klatt
PHONE: (231) 591-2671 OFFICE: ASC 2114 E-MAIL: klattp@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. Biology degree from Ferris State University.

Number of 300+ Credits:

Program Requirements: Effective for students entering Environmental Biology Fall Semester 2015

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR –38 Credit Hours Required					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 and CHEM 121)	4	
BIOL	218	Microbial Ecology	(BIOL 121)	3	
BIOL	330	Zoology	(BIOL 122)	4	
BIOL	350	Plants and Fungi	(BIOL 122)	4	
BIOL	343 or 344 or 348	Ornithology Entomology Animal Behavior	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	453	Plant Physiology	(BIOL 122 & BIOL 350)	4	
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 and Sr. Standing)	2	
BIOL	492	Biology Internship		1 – 6	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
Biology Elective: Choose one 300+ BIOL elective. The following courses are recommended. An additional course from among BIOL 346/347/442 may also be taken.					
BIOL	340 or 345	Evolution Environmental Regulations	(BIOL 122) (BIOL 122)	3	
SUPPORTING SCIENCES – 28-40 Credit Hours Required					
MATH	130	Advanced Algebra/Analytical Trigonometry	(MATH 120 or by placement)	4	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	214 or 321/322	Fundamentals of Organic Chemistry Organic Chemistry 1 & 2	(CHEM 114 or CHEM 121) (CHEM 122)	4 10	
CHEM	324 or 364	Fundamentals of Biochemistry Biochemistry	(CHEM 214) (CHEM 322)	3 4	
PHYS	130 or 211/212	Concepts in Physics Introductory Physics 1 & 2	(MATH 110) (MATH 120)	4 8	
GEOL	121 or 131	Physical Geology Geology and Land Use Management		4 3	
BIOLOGY APPLICATION AREA – 6 Credit Hours Required					
MATH	251	Statistics for the Life Sciences	(MATH 130)	3	
GISC or GEOG	225 311	Principles of Geographic Information Systems Social Implications of Geographic Information Systems	(Basic Computer Skills) (Jr. Standing)	3	

ELECTIVES – 7-19 Credit Hours of courses to reach the minimum of 121 credits required for this degree.				

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog:

http://www.ferris.edu/htmls/academics/gened/courses.html

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
Foundation		
200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Current**

FORENSIC BIOLOGY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY

Lead Advisor: Dr. Gary Rodabaugh
PHONE: (231) 591-2308 OFFICE: ASC 2016 E-MAIL: rodabaug@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA including an English and mathematics course or they will be considered as first year students.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one degree in Biology (either B.S. or B.A.) from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering Forensic Biology Fall Semester 2014

REQUIRED		COURSE TITLE – See FSU catalog course descriptions for prerequisites not indicated below		FSU S.H.	GRADE
MAJOR – 37 Credit Hours Required					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL*	205 or	Human Anatomy and Physiology	(CHEM 114 or CHEM 121)	5	
	321/322	Human Physiology and Anatomy 1 & 2	(BIOL 122 & CHEM 122)	8	
BIOL	207	Forensic Biology		4	
BIOL**	286	General Microbiology	(CHEM 122)	3	
BIOL	375	Genetics	(BIOL 122)	3	
BIOL	346 or	Ecological Assessment	(BIOL 122)	3	
	347 or	Environmental Conservation	(BIOL 122)		
	442	Ecology	(BIOL 122)		
BIOL	407	Forensic DNA Analysis	(BIOL 207 & BIOL 375)	3	
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 321 and Sr. Standing)	2	
BIOL Electives (300 level or above) for a total of 37 credits in BIOL courses (see next page).				3-6	
SUPPORTING SCIENCES – 40-46 Credit Hours Required					
MATH	220	Analytical Geometry – Calculus 1	(MATH 130 or by placement)	4	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	207	Science and Crime		3	
CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
CHEM	322	Organic Chemistry 2	(CHEM 321)	5	
CHEM	324 or	Fundamentals of Biochemistry	(CHEM 322)	3	
	364	Biochemistry	(CHEM 322)	4	
CHEM	231 or	Quantitative Analysis	(CHEM 122)	4	
	307 or	Forensic Chemistry	(BIOL 207 & CHEM 207)	3	
	332	Biochemistry Lab 1	(CHEM 322 & CHEM 364 concurrent)	2	
PHYS	211/212 or	Introductory Physics 1 & 2	(MATH 120)	8	
	241/242	General Physics 1 & 2	(MATH 220)	10	

BIOLOGY APPLICATION AREA - 9 Credit Hours Required					
MATH	251	Statistics for the Life Sciences	(MATH 130)	3	
CRIM	110	Introduction to Criminal Justice		3	
CRIM	301	CJ Investigation Issues	(CRIM 110)	3	
ELECTIVES – 0-5 Credit Hours of courses to reach the minimum 121 credits required for this degree.					

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog:

http://www.ferris.edu/htmls/academics/gened/courses.html

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	
B. SCIENTIFIC UNDERSTANDING 7 Sem Credits		
This requirement is achieved in the program major.		
C. QUANTITATIVE SKILLS		
This requirement is achieved in the program major.		
D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
PSYC 150 recommended		
PSYC 350 recommended		
	TOTAL	
F. GLOBAL CONSCIOUSNESS		
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.		
Course:		
G. RACE/ETHNICITY/GENDER		
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.		
Course:		

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with Advisor):

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 474	Adv. Cell / Mol. Biology	3
BIOL 301	Exercise Physiology	3	BIOL 370	Developmental Biology	4	BIOL 475	Bioinformatics	3
BIOL 310	Nutrition	3	BIOL 373	Cell Biology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 330	Zoology	4	BIOL 421	Endocrinology	3	BIOL 485	Biology Research	1-9
BIOL 340	Evolution	3	BIOL 423	Neurobiology	3	BIOL 490	Special Topics in Biology	3-4
BIOL 343	Ornithology	3	BIOL 453	Plant Physiology	4	BIOL 492	Biology Internship	1-9
BIOL 344	Entomology	3	BIOL 470	Molecular Genetics	4	BIOL 497	Independent Study	1-6
BIOL 345	Environmental Regulations	3	BIOL 471	Recombinant DNA Lab	3			
BIOL 348	Animal Behavior	3	BIOL 472	Proteins	3			
BIOL 349	Medical Parasitology	3	BIOL 473	Proteins Laboratory	3			

*Credit toward the degree cannot be earned in both BIOL 205 and BIOL 321/322.
**BIOL 386 may substitute for BIOL 286.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Proposed**

FORENSIC BIOLOGY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY

Lead Advisor: Dr. Gary Rodabaugh
PHONE: (231) 591-2308 OFFICE: ASC 2016 E-MAIL: rodabaug@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one degree in Biology (either B.S. or B.A.) from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering Forensic Biology Fall Semester 2015

REQUIRED		COURSE TITLE – See FSU catalog course descriptions for prerequisites not indicated below		FSU S.H.	GRADE
MAJOR – 37 Credit Hours Required					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL*	205 or 321/322	Human Anatomy and Physiology Human Physiology and Anatomy 1 & 2	(CHEM 114 or CHEM 121) (BIOL 122 & CHEM 122)	5 8	
BIOL	207	Forensic Biology		4	
BIOL**	286	General Microbiology	(CHEM 122)	3	
BIOL	375	Genetics	(BIOL 122)	3	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	407	Forensic DNA Analysis	(BIOL 207 & BIOL 375)	3	
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 321 and Sr. Standing)	2	
BIOL Electives (300 level or above) for a total of 37 credits in BIOL courses (see next page).				3-6	
SUPPORTING SCIENCES – 40-46 Credit Hours Required					
MATH	220	Analytical Geometry – Calculus 1	(MATH 130 or by placement)	4	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	207	Science and Crime		3	
CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
CHEM	322	Organic Chemistry 2	(CHEM 321)	5	
CHEM	324 or 364	Fundamentals of Biochemistry Biochemistry	(CHEM 322) (CHEM 322)	3 4	
CHEM	231 or 307 or 332	Quantitative Analysis Forensic Chemistry Biochemistry Lab 1	(CHEM 122) (BIOL 207 & CHEM 207) (CHEM 322 & CHEM 364 concurrent)	4 3 2	
PHYS	211/212 or 241/242	Introductory Physics 1 & 2 General Physics 1 & 2	(MATH 120) (MATH 220)	8 10	

BIOLOGY APPLICATION AREA - 9 Credit Hours Required					
MATH	251	Statistics for the Life Sciences	(MATH 130)	3	
CRIM	110	Introduction to Criminal Justice		3	
CRIM	301	CJ Investigation Issues	(CRIM 110)	3	
ELECTIVES – 0-5 Credit Hours of courses to reach the minimum 121 credits required for this degree.					

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog:
http://www.ferris.edu/htmls/academics/gened/courses.html

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
PSYC 150 recommended		
PSYC 350 recommended		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with Advisor):

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 474	Adv. Cell / Mol. Biology	3
BIOL 301	Exercise Physiology	4	BIOL 370	Developmental Biology	4	BIOL 475	Bioinformatics	3
BIOL 310	Nutrition	3	BIOL 373	Cell Biology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 330	Zoology	4	BIOL 421	Endocrinology	3	BIOL 485	Biology Research	1-9
BIOL 340	Evolution	3	BIOL 423	Neurobiology	3	BIOL 490	Special Topics in Biology	3-4
BIOL 343	Ornithology	3	BIOL 453	Plant Physiology	4	BIOL 492	Biology Internship	1-9
BIOL 344	Entomology	3	BIOL 470	Molecular Genetics	4	BIOL 497	Independent Study	1-6
BIOL 345	Environmental Regulations	3	BIOL 471	Recombinant DNA Lab	3			
BIOL 348	Animal Behavior	3	BIOL 472	Proteins	3			
BIOL 349	Medical Parasitology	3	BIOL 473	Proteins Laboratory	3			

*Credit toward the degree cannot be earned in both BIOL 205 and BIOL 321/322.
**BIOL 386 may substitute for BIOL 286.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES
Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

Form D - Current

BACHELOR OF SCIENCE IN
BIOTECHNOLOGY

FERRIS STATE UNIVERSITY

Program Coordinator: Dr. Bradley Isler

PHONE: (231) 591-2641 OFFICE: ASC 2113 E-MAIL: islerb@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.
Admission to the Junior Year Professional Sequence is competitive

Graduation Requirements

1. 2.0 Cumulative Grade Average in all courses. No grade lower than a C- in science and math courses allowed for graduation
2. Minimum 121 Credits including general education requirements
3. Residency Requirements: 30 minimum FSU semester credits
4. Minimum 40 credits numbered 300 or higher

Number of 300+ Credits: _____

Program requirements for students entering Biotechnology Fall Semester 2014

REQUIRED		COURSE TITLE – FOR PREREQUISITES NOT INDICATED, SEE FSU CATALOG COURSE DESCRIPTIONS		FSU S.H.	GRADE
Major – 91 credit minimum - No grade lower than a C- allowed for graduation.					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121& CHEM 121)	4	
BIOL	205	Human Anatomy/Physiology	(CHEM 114 or CHEM 121)	5	
OR					
BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 and CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
BIOL	375	Principles of Genetics (F, Sp)	(BIOL 122)	3	
BIOL	386	Microbiology and Immunology (Sp, Su)	(BIOL 322 & CHEM 214 or 321)	5	
BIOL	470	Molecular Genetics (Sp Even)	(BIOL 375 and CHEM 364)	4	
BIOL	471	Recombinant DNA Lab (Sp)	(BIOL 375 and CHEM 333)	3	
BIOL	472	Proteins (F Odd)	(BIOL 122 and CHEM 322)	3	
BIOL	473	Proteins Laboratory (F)	(CHEM 333)	3	
BIOL	474	Advanced Cell & Molecular Biology (Sp Odd)	(BIOL 375 and CHEM 364)	3	
BIOL	475	Bioinformatics (Sp)	(BIOL 375)	3	
BIOL	476	Advanced Techniques in Biotechnology (F)	(BIOL 386 and CHEM 333)	2	
CHEM	121	General Chemistry 1	(MATH 115 and prior CHEM)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	231	Quantitative Analysis (F)	(CHEM 122)	4	
CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
CHEM	322	Organic Chemistry 2	(CHEM 321)	5	
CHEM	332	Biochemistry Lab 1 (F)	(CHEM 322, Corequisite = CHEM 364)	2	
CHEM	333	Biochemistry Lab 2 (Sp)	(CHEM 332)	2	
CHEM	364	Biochemistry	(CHEM 322)	4	
CHEM	474	Advanced Biochemistry (Sp)	(CHEM 364, BIOL 375, and CHEM 231 or 451)	3	
MATH	130	Advanced Algebra & Analytical Trigonometry	(MATH 120 or placement)	4	
MATH	251	Statistics for the Life Sciences	(MATH 130)	3	
PHYS	211	Introductory Physics 1	(MATH 120)	4	
CHOOSE ONE:					
BIOL	491	Biotechnology Internship	(instructor consent)	3	
BIOL	497	Independent Studies in Biology	(instructor consent)	3	
CHEM	497	Independent Studies in Chemistry	(instructor consent)	3	

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog:

http://www.ferris.edu/htmls/academics/gened/courses.html

I. GENERAL EDUCATION REQUIREMENTS		
A. COMMUNICATION COMPETENCE	**12 Sem Credits**	
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311, 321, 323, or 325		3
COMM 105 or 121		3
	TOTAL	
B. SCIENTIFIC UNDERSTANDING	**7 Sem Credits**	
This requirement is satisfied in the program requirements area.		
C. QUANTITATIVE SKILLS		
This requirement is satisfied in the program requirements area.		
D. CULTURAL ENRICHMENT	**9 Sem Credits**	
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		

	TOTAL	
E. SOCIAL AWARENESS	**9 Sem Credits**	
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one 200+ level course		
Course	Grade	Credit
Foundation		
200+ level		
	TOTAL	
F. GLOBAL CONSCIOUSNESS		
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.		
Course:		
G. RACE/ETHNICITY/GENDER		
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.		
Course:		

Sample Course Sequence: The following chart depicts one method to begin the course work requirements. In order to complete this program in a four year plan, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

It is strongly recommended that students take electives during the first and second year summer semesters either at Ferris State University or at a community college, as it will lighten their class load during the fall and spring semesters.

First Year				Second Year			
Fall		**Spring**		**Fall**		**Spring**	
BIOL 121	4	BIOL 122	4	BIOL 321	4	BIOL 322	4
CHEM 121	5	CHEM 122	5	CHEM 231	4	CHEM 322	5
ENGL 150	3	MATH 130	4	CHEM 321	5	PHYS 211	4
COMM 105 or 121	3	Cultural Elective	3	Social Elective	3	ENGL 250	3
	15		16		16		16

1) Admission to the third year level is granted on a competitive basis based on GPA and space available. As a Biotechnology student, you must have completed the course prerequisites and have earned an overall GPA of 2.7 or above to be eligible to apply.
2) Students must take their remaining general education courses during their third and fourth years.

Third Year				Fourth Year			
Fall		**Spring**		**Fall**		**Spring**	
BIOL 375	3	BIOL 386	5	BIOL 476	2	CHEM 474	3
CHEM 332	2	CHEM 333	2	BIOL 473	3	BIOL 471	3
CHEM 364	4	BIOL 475	3	ENGL 311	3	Cultural Elective	3
Cultural Elective	3	BIOL 470 (Even yr)	4	MATH 251	3	Social Elective	3
BIOL 472 (Odd yr)	3	BIOL 474 (Odd yr)	3	BIOL 472 (Odd yr)	3	BIOL 470 (Even yr)	4
Social Elective (Even yr)	3		13-14	Social Elective (Even yr)	3	BIOL 474 (Odd yr)	3
	15	**Summer**			14		15-16
		Biotechnology Internship	3				

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

Form D - Proposed

BACHELOR OF SCIENCE IN
BIOTECHNOLOGY

FERRIS STATE UNIVERSITY

Program Coordinator: Dr. Bradley Isler

PHONE: (231) 591-2641 OFFICE: ASC 2113 E-MAIL: BradleyIsler@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA including an English and mathematics course or they will be considered as first year students.
Admission to the Junior Year Professional Sequence is competitive

Graduation Requirements

1. 2.0 Cumulative Grade Average in all courses. No grade lower than a C- in science and math courses allowed for graduation
2. Minimum 121 Credits including general education requirements
3. Residency Requirements: 30 minimum FSU semester credits
4. Minimum 40 credits numbered 300 or higher

Number of 300+ Credits: _____

Program requirements for students entering Biotechnology Fall Semester 2014

REQUIRED		COURSE TITLE – FOR PREREQUISITES NOT INDICATED, SEE FSU CATALOG COURSE DESCRIPTIONS		FSU S.H.	GRADE
Major – 91 credit minimum - No grade lower than a C- allowed for graduation.					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121& CHEM 121)	4	
BIOL	205	Human Anatomy/Physiology	(CHEM 114 or CHEM 121)	5	
OR					
BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 and CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
BIOL	375	Principles of Genetics (F, Sp)	(BIOL 122)	3	
BIOL	386	Microbiology and Immunology (Sp, Su)	(BIOL 322 & CHEM 214 or 321)	5	
BIOL	470	Molecular Genetics (Sp Even)	(BIOL 375 and CHEM 364)	4	
BIOL	471	Recombinant DNA Lab (Sp)	(BIOL 375 and CHEM 333)	3	
BIOL	472	Proteins (F Odd)	(BIOL 122 and CHEM 322)	3	
BIOL	473	Proteins Laboratory (F)	(CHEM 333)	3	
BIOL	474	Advanced Cell & Molecular Biology (Sp Odd)	(BIOL 375 and CHEM 364)	3	
BIOL	475	Bioinformatics (Sp)	(BIOL 375)	3	
BIOL	476	Advanced Techniques in Biotechnology (F)	(BIOL 386 and CHEM 333)	2	
CHEM	121	General Chemistry 1	(MATH 115 and prior CHEM)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	231	Quantitative Analysis (F)	(CHEM 122)	4	
CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
CHEM	322	Organic Chemistry 2	(CHEM 321)	5	
CHEM	332	Biochemistry Lab 1 (F)	(CHEM 322, Corequisite = CHEM 364)	2	
CHEM	333	Biochemistry Lab 2 (Sp)	(CHEM 332)	2	
CHEM	364	Biochemistry	(CHEM 322)	4	
CHEM	474	Advanced Biochemistry (Sp)	(CHEM 364, BIOL 375, and CHEM 231 or 451)	3	
MATH	220	Analytical Geometry – Calculus 1	(MATH 130 or by placement)	4	
MATH	251	Statistics for the Life Sciences	(MATH 130)	3	
PHYS	211	Introductory Physics 1	(MATH 120)	4	
CHOOSE ONE:					
BIOL	491	Biotechnology Internship	(instructor consent)	3	
BIOL	497	Independent Studies in Biology	(instructor consent)	3	
CHEM	497	Independent Studies in Chemistry	(instructor consent)	3	

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog:

http://www.ferris.edu/htmls/academics/gened/courses.html

I. GENERAL EDUCATION REQUIREMENTS		
A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311, 321, 323, or 325		3
COMM 105 or 121		3
	TOTAL	
B. SCIENTIFIC UNDERSTANDING 7 Sem Credits		
This requirement is satisfied in the program requirements area.		
C. QUANTITATIVE SKILLS		
This requirement is satisfied in the program requirements area.		
D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		

	TOTAL	
E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one 200+ level course		
Course	Grade	Credit
Foundation		
200+ level		
	TOTAL	
F. GLOBAL CONSCIOUSNESS		
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.		
Course:		
G. RACE/ETHNICITY/GENDER		
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.		
Course:		

Sample Course Sequence: The following chart depicts one method to begin the course work requirements. In order to complete this program in a four year plan, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

It is strongly recommended that students take electives during the first and second year summer semesters either at Ferris State University or at a community college, as it will lighten their class load during the fall and spring semesters.

First Year			
Fall		**Spring**	
BIOL 121	4	BIOL 122	4
CHEM 121	5	CHEM 122	5
ENGL 150	3	MATH 220	4
COMM 105 or 121	3	Cultural Elective	3
	15		16

Second Year			
Fall		**Spring**	
BIOL 321	4	BIOL 322	4
CHEM 231	4	CHEM 322	5
CHEM 321	5	PHYS 211	4
Social Elective	3	ENGL 250	3
	16		16

1) Admission to the third year level is granted on a competitive basis based on GPA and space available. As a Biotechnology student, you must have completed the course prerequisites and have earned an overall GPA of 2.7 or above to be eligible to apply.
2) Students must take their remaining general education courses during their third and fourth years.

Third Year			
Fall		**Spring**	
BIOL 375	3	BIOL 386	5
CHEM 332	2	CHEM 333	2
CHEM 364	4	BIOL 475 (Odd yr)	3
Cultural Elective	3	BIOL 470 (Even yr)	4
BIOL 472 (Odd yr)	3	BIOL 474 (Odd yr)	3
Social Elective (Even yr)	3		13-14
	15	**Summer**	
		Biotechnology Internship	**3**

Fourth Year			
Fall		**Spring**	
BIOL 476	2	CHEM 474	3
BIOL 473	3	BIOL 471	3
ENGL 311	3	Cultural Elective	3
MATH 251	3	BIOL 475 (Odd yr)	3
BIOL 472 (Odd yr)	3	BIOL 470 (Even yr)	4
Social Elective (Even yr)	3	BIOL 474 (Odd yr)	3
	14		13-15

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Current**

PRE-DENTISTRY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. Mary Murnik
PHONE: (231) 591-2546 OFFICE: ASC 2117 E-MAIL: murnikm@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. or B.A. degree in Biology from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering the Pre-Dentistry Concentration Fall Semester 2014

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 36 credit hours of required courses					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 & CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
BIOL	286 or	General Microbiology	(CHEM 122)	3	
	386	Microbiology and Immunology (recommended)	(BIOL 322 & CHEM 214 or 321)	5	
BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	346 or	Ecological Assessment	(BIOL 122)		
	347 or	Environmental Conservation	(BIOL 122)	3	
	442	Ecology	(BIOL 122)		
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 & Sr. Standing)	2	
BIOL Electives (300 level or above) for a total of 36 credits in BIOL courses (see next page).				7 - 9	
BIOL	370	Developmental Biology (recommended)	(BIOL 122)	4	
SUPPORTING SCIENCES – 34 to 37 Credit Hours of Required Courses					
MATH	120	Trigonometry (minimum requirement)	(MATH 115 or by placement)	3	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
CHEM	322	Organic Chemistry 2	(CHEM 322)	5	
CHEM	324 or	Fundamentals of Biochemistry	(CHEM 322)	3	
	364	Biochemistry (recommended)	(CHEM 322)	4	
PHYS	211/212 or	Introductory Physics 1 & 2	(MATH 120)	8	
	241/242	General Physics 1 & 2	(MATH 220)	10	
BIOLOGY APPLICATION AREA - 5 Credit Hours Required (*In addition to the course listed below, choose at least one more course from the list on the next page for a total of 5 credits. Additional credits in BIOL courses may also be used.*)					
RMLS	122	Responding to Emergencies (recommended)		2	
ELECTIVES - 12-15 Credit Hours of courses to reach the minimum of 121 credits required for this degree.					
MGMT	310	Small Business Management (recommended)		3	

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
Foundation PSYC 150 recommended		
SOCY 121 recommended		
200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with Advisor):

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 472	Proteins	3
BIOL 301	Exercise Physiology	3	BIOL 370	Developmental Biology	4	BIOL 473	Proteins Laboratory	3
BIOL 310	Nutrition	3	BIOL 373	Cell Biology	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 330	Zoology	4	BIOL 407	Forensic DNA Analysis	3	BIOL 475	Bioinformatics	3
BIOL 340	Evolution	3	BIOL 421	Endocrinology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 343	Ornithology	3	BIOL 423	Neurobiology	3	BIOL 485	Biological Research	1-9
BIOL 344	Entomology	3	BIOL 453	Plant Physiology	4	BIOL 490	Special Topics in Biology	3-4
BIOL 345	Environmental Regulations	3	BIOL 470	Molecular Genetics	4	BIOL 492	Biology Internship	1-9
BIOL 348	Animal Behavior	3	BIOL 471	Recombinant DNA Lab	3	BIOL 497	Independent Study	1-6
BIOL 349	Medical Parasitology	3						

Application Area (Consult with advisor): Any of the Biology electives above may be used. Other common classes include:

CAHS 160	Nutrition for Healthy Living	3	MRIS 102	Orientation to Med Vocab	1 or
EDPE 338	Biomechanics	3	MRIS 103	Medical Terminology	4
MATH 251	Statistics for the Life Sciences	3			

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Proposed**

PRE-DENTISTRY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. Mary Murnik
PHONE: (231) 591-2546 OFFICE: ASC 2117 E-MAIL: murnikm@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. Biology degree from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering the Pre-Dentistry Concentration Fall Semester 2015

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 36 credit hours of required courses					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 & CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
BIOL	286 or	General Microbiology	(CHEM 122)	3	
	386	Microbiology and Immunology (recommended)	(BIOL 322 & CHEM 214 or 321)	5	
BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	346 or	Ecological Assessment	(BIOL 122)	3	
	347 or	Environmental Conservation	(BIOL 122)		
	442	Ecology	(BIOL 122)		
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 & Sr. Standing)	2	
BIOL Electives (300 level or above) for a total of 36 credits in BIOL courses (see next page).				7 - 9	
BIOL	370	Developmental Biology (recommended)	(BIOL 375)	4	
SUPPORTING SCIENCES – 34 to 37 Credit Hours of Required Courses					
MATH	120	Trigonometry (minimum requirement)	(MATH 115 or by placement)	3	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
CHEM	322	Organic Chemistry 2	(CHEM 322)	5	
CHEM	324 or	Fundamentals of Biochemistry	(CHEM 322)	3	
	364	Biochemistry (recommended)	(CHEM 322)	4	
PHYS	211/212 or	Introductory Physics 1 & 2	(MATH 120)	8	
	241/242	General Physics 1 & 2	(MATH 220)	10	
BIOLOGY APPLICATION AREA - 5 Credit Hours Required (In addition to the course listed below, choose at least one more course from the list on the next page for a total of 5 credits. Additional credits in BIOL courses may also be used.)					
RMLS	122	Responding to Emergencies (recommended)		2	
ELECTIVES - 12-15 Credit Hours of courses to reach the minimum of 121 credits required for this degree.					
MGMT	310	Small Business Management (recommended)		3	

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE	**12 Sem Credits**	
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING	**7 Sem Credits**
This requirement is achieved in the program major.	

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT	**9 Sem Credits**	
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS	**9 Sem Credits**	
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
Foundation PSYC 150 recommended		
SOCY 121 recommended		
200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with Advisor):

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 472	Proteins	3
BIOL 301	Exercise Physiology	4	BIOL 370	Developmental Biology	4	BIOL 473	Proteins Laboratory	3
BIOL 310	Nutrition	3	BIOL 373	Cell Biology	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 330	Zoology	4	BIOL 407	Forensic DNA Analysis	3	BIOL 475	Bioinformatics	3
BIOL 340	Evolution	3	BIOL 421	Endocrinology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 343	Ornithology	3	BIOL 423	Neurobiology	3	BIOL 485	Biological Research	1-9
BIOL 344	Entomology	3	BIOL 453	Plant Physiology	4	BIOL 490	Special Topics in Biology	3-4
BIOL 345	Environmental Regulations	3	BIOL 470	Molecular Genetics	4	BIOL 492	Biology Internship	1-9
BIOL 348	Animal Behavior	3	BIOL 471	Recombinant DNA Lab	3	BIOL 497	Independent Study	1-6
BIOL 349	Medical Parasitology	3						

Application Area (Consult with advisor): Any of the Biology electives above may be used. Other common classes include:

COHP 160	Nutrition for Healthy Living	3	MRIS 102	Orientation to Med Vocab	1 or
EDPE 338	Biomechanics	3	MRIS 103	Medical Terminology	4
MATH 251	Statistics for the Life Sciences	3			

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Current**

PRE-MEDICINE
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. Mike Ryan
PHONE: (231) 591-5892 OFFICE: ASC 2115 E-MAIL: ryanm@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. or B.A. degree in Biology from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering the Pre-Medicine Concentration Fall Semester 2014

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 36 Credit Hours of Required Courses					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 & CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
BIOL	386	Microbiology and Immunology	(BIOL 322 & CHEM 214 or 321)	5	
BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	460	Current Topics in Biology	(ENGL 311 or ENGL 321 and Senior Standing)	2	
BIOL	370	Developmental Biology	(BIOL 122)	4	
BIOL Elective (300 level or above) for a total of 36 credits in BIOL courses (see next page).				3	
SUPPORTING SCIENCES – 36 to 40 Credit Hours of Required Courses					
MATH	130 or 230	Advanced Algebra/Analytical Trigonometry Analytical Geometry & Calculus 2	(MATH 120 or by placement) (MATH 220)	4	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
CHEM	322	Organic Chemistry 2	(CHEM 322)	5	
CHEM	364	Biochemistry	(CHEM 322)	4	
PHYS	211/212 or 241/242	Introductory Physics 1 & 2 General Physics 1 & 2	(MATH 120) (MATH 220)	8 10	
BIOLOGY APPLICATION AREA - 5 Credit Hours Required (Consult your advisor) Additional courses in Biology may satisfy this requirement. See next page for list of commonly used classes.					
ELECTIVES - 10-14 Credit Hours of courses to reach the minimum of 121 credits required for this degree.					
MGMT	310	Small Business Management (recommended)		3	

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE		**12 Sem Credits**
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING	**7 Sem Credits**
This requirement is achieved in the program major.	

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT		**9 Sem Credits**
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS		**9 Sem Credits**
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
Foundation		
200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Biology Electives (Consult with Advisor):

BIOL 300	Pathophysiology	3
BIOL 301	Exercise Physiology	3
BIOL 310	Nutrition	3
BIOL 330	Zoology	4
BIOL 340	Evolution	3
BIOL 343	Ornithology	3
BIOL 344	Entomology	3
BIOL 345	Environmental Regulations	3
BIOL 348	Animal Behavior	3
BIOL 349	Medical Parasitology	3
BIOL 350	Plants and Fungi	3
BIOL 373	Cell Biology	3
BIOL 407	Forensic DNA Analysis	3
BIOL 421	Endocrinology	3
BIOL 423	Neurobiology	3
BIOL 453	Plant Physiology	4
BIOL 470	Molecular Genetics	4
BIOL 471	Recombinant DNA Lab	3
BIOL 472	Proteins	3
BIOL 473	Proteins Laboratory	3
BIOL 474	Adv. Cell and Molecular Biology	3
BIOL 475	Bioinformatics	3
BIOL 476	Adv. Techniques Biotechnology	2
BIOL 485	Biological Research	1-9
BIOL 490	Special Topics in Biology	3-4
BIOL 492	Biology Internship	1-9
BIOL 497	Independent Study	1-6

Application Area (Consult with advisor): Any of the Biology electives above may be used. Other common classes include

RMLS 122	Responding to Emergencies	2
CAHS 160	Nutrition for Healthy Living	3
MATH 251	Statistics for the Life Sciences	3
EDPE 338	Biomechanics	3
MRIS 102	Orientation to Medical Vocabulary	1 or
MRIS 103	Medical Terminology	4

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Proposed**

PRE-MEDICINE
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. Mike Ryan
PHONE: (231) 591-5892 OFFICE: ASC 2115 E-MAIL: ryanm@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. Biology degree from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering the Pre-Medicine Concentration Fall Semester 2014

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 36 Credit Hours of Required Courses					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 & CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
BIOL	386	Microbiology and Immunology	(BIOL 322 & CHEM 214 or 321)	5	
BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	460	Current Topics in Biology	(ENGL 311 or ENGL 321 and Senior Standing)	2	
BIOL	370	Developmental Biology	(BIOL 375)	4	
BIOL Elective (300 level or above) for a total of 36 credits in BIOL courses (see next page).				3	
SUPPORTING SCIENCES – 36 to 40 Credit Hours of Required Courses					
MATH	130 or 230	Advanced Algebra/Analytical Trigonometry Analytical Geometry & Calculus 2	(MATH 120 or by placement) (MATH 220)	4	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
CHEM	322	Organic Chemistry 2	(CHEM 322)	5	
CHEM	364	Biochemistry	(CHEM 322)	4	
PHYS	211/212 or 241/242	Introductory Physics 1 & 2 General Physics 1 & 2	(MATH 120) (MATH 220)	8 10	
BIOLOGY APPLICATION AREA - 5 Credit Hours Required (Consult your advisor) Additional courses in Biology may satisfy this requirement. See next page for list of commonly used classes.					
ELECTIVES - 10-14 Credit Hours of courses to reach the minimum of 121 credits required for this degree.					
MGMT	310	Small Business Management (recommended)		3	

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE	**12 Sem Credits**	
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING	**7 Sem Credits**
This requirement is achieved in the program major.	

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT		**9 Sem Credits**
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS		**9 Sem Credits**
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
Foundation		
200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Biology Electives (Consult with Advisor):

BIOL 300	Pathophysiology	3
BIOL 301	Exercise Physiology	4
BIOL 310	Nutrition	3
BIOL 330	Zoology	4
BIOL 340	Evolution	3
BIOL 343	Ornithology	3
BIOL 344	Entomology	3
BIOL 345	Environmental Regulations	3
BIOL 348	Animal Behavior	3
BIOL 349	Medical Parasitology	3
BIOL 350	Plants and Fungi	3
BIOL 373	Cell Biology	3
BIOL 407	Forensic DNA Analysis	3
BIOL 421	Endocrinology	3
BIOL 423	Neurobiology	3
BIOL 453	Plant Physiology	4
BIOL 470	Molecular Genetics	4
BIOL 471	Recombinant DNA Lab	3
BIOL 472	Proteins	3
BIOL 473	Proteins Laboratory	3
BIOL 474	Adv. Cell and Molecular Biology	3
BIOL 475	Bioinformatics	3
BIOL 476	Adv. Techniques Biotechnology	2
BIOL 485	Biological Research	1-9
BIOL 490	Special Topics in Biology	3-4
BIOL 492	Biology Internship	1-9
BIOL 497	Independent Study	1-6

Application Area (Consult with advisor): Any of the Biology electives above may be used. Other common classes include

RMLS 122	Responding to Emergencies	2
COHP 160	Nutrition for Healthy Living	3
MATH 251	Statistics for the Life Sciences	3
EDPE 338	Biomechanics	3
MRIS 102	Orientation to Medical Vocabulary	1 or
MRIS 103	Medical Terminology	4

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Current**

PRE-OPTOMETRY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. Chris Westerkamp
PHONE: (231) 591-5037 OFFICE: ASC 2119 E-MAIL: westerc@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

The following program presents the minimum entrance requirements of the Michigan College of Optometry and the requirements for the Bachelor of Science in Biology. As of Fall 2007, the MCO recommends that applicants will have completed a bachelor degree, however students may be eligible to apply if they have earned a minimum of 90 college credits in specific courses as indicated on this checksheet. Admission to the Michigan College of Optometry is highly competitive, and the completion of this program does not ensure acceptance by the Michigan College of Optometry. Admission requirements for other schools of optometry may vary.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. or B.A. degree in Biology from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering the Pre-Optometry Concentration Fall Semester 2014
[Note: Courses marked with an asterisk satisfy the minimum admission requirements of the Michigan College of Optometry.]

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 37 Credit Hours Required					
*BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
*BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL	205	Human Anatomy and Physiology	(CHEM 114 or CHEM 121)	5	
*BIOL	286	General Microbiology	(CHEM 122)	3	
BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 & Sr. Standing)	2	
BIOL	370	Developmental Biology	(BIOL 122)	4	
BIOL	373	Cell Biology	(BIOL 122 & CHEM 214 or 322)	3	
BIOL Electives (300 level or above) for a total of 37 credits in BIOL courses (see next page).				6	
SUPPORTING SCIENCES – 36-37 Credit Hours Required					
*MATH	220	Analytical Geometry & Calculus 1	(MATH 130 or by placement)	4	
*CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
*CHEM	122	General Chemistry 2	(CHEM 121)	5	
*CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
*CHEM	322	Organic Chemistry 2	(CHEM 322)	5	
CHEM	324 or 364	Fundamentals of Biochemistry Biochemistry	(CHEM 322) (CHEM 322)	3 4	
*PHYS	211	Introductory Physics 1	(MATH 120)	4	
*PHYS	212	Introductory Physics 2	(PHYS 211)	4	
BIOLOGY APPLICATION AREA - 5 Credit Hours Required (In addition to the course listed below, choose at least one more course from the list on the next page for a total of 5 credits. Additional credits in BIOL courses may also be used.)					
*MATH	251	Statistics for the Life Sciences	(MATH 130)	3	

ELECTIVES - 12-13 Credit Hours of courses to reach the minimum of 121 credits required for this degree.					
MGMT ACCT	310 or 201	Small Business Management (recommended) Principles of Accounting 1 (recommended)	(Sophomore Status) (MATH 110)	3	

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
*ENGL 150		3
*ENGL 250		3
ENGL 311 or 321 or 323		3
*COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
*200+ level		
*		
*		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
*Foundation PSYC 150		
*		
*200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course: *

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course: *

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with advisor):

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 472	Proteins	3
BIOL 301	Exercise Physiology	3	BIOL 370	Developmental Biology	4	BIOL 473	Proteins Laboratory	3
BIOL 310	Nutrition	3	BIOL 373	Cell Biology	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 330	Zoology	4	BIOL 407	Forensic DNA Analysis	3	BIOL 475	Bioinformatics	3
BIOL 340	Evolution	3	BIOL 421	Endocrinology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 343	Ornithology	3	BIOL 423	Neurobiology	3	BIOL 485	Biological Research	1-9
BIOL 344	Entomology	3	BIOL 453	Plant Physiology	4	BIOL 490	Special Topics in Biology	3-4
BIOL 345	Environmental Regulations	3	BIOL 470	Molecular Genetics	4	BIOL 492	Biology Internship	1-9
BIOL 348	Animal Behavior	3	BIOL 471	Recombinant DNA Lab	3	BIOL 497	Independent Study	1-6
BIOL 349	Medical Parasitology	3						

Application area (Consult with advisor): Any of the Biology electives above may be used. Other common classes taken include

RMLS 122	Responding to Emergencies	2	EDPE 338	Biomechanics	3
CAHS 160	Nutrition for Healthy Living	3	MRIS 102	Orientation to Medical Vocabulary	1 or
			MRIS 103	Medical Terminology	4

Note: MCO will accept either STQM 260 or PSYC 210 as a substitute for MATH 251. However, only MATH 251 applies toward the B.S. in Biology.

Note: The Optometry Admission Test (OAT) is required for admission to MCO. Students should consider taking the OAT in early summer of the year prior to the year of entry into MCO. This test may be taken as often as desired without penalty imposed by MCO, however the OAT imposes mandatory wait periods between test dates. More information can be found at www.opted.org.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Proposed**

PRE-OPTOMETRY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. Chris Westerkamp
PHONE: (231) 591-5037 OFFICE: ASC 2119 E-MAIL: westerc@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA.

The following program presents the minimum entrance requirements of the Michigan College of Optometry and the requirements for the Bachelor of Science in Biology. As of Fall 2007, the MCO recommends that applicants will have completed a bachelor degree, however students may be eligible to apply if they have earned a minimum of 90 college credits in specific courses as indicated on this checksheet. Admission to the Michigan College of Optometry is highly competitive, and the completion of this program does not ensure acceptance by the Michigan College of Optometry. Admission requirements for other schools of optometry may vary.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. Biology degree from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering the Pre-Optometry Concentration Fall Semester 2015
[Note: Courses marked with an asterisk satisfy the minimum admission requirements of the Michigan College of Optometry.]

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 37 Credit Hours Required					
*BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
*BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL	205	Human Anatomy and Physiology	(CHEM 114 or CHEM 121)	5	
*BIOL	286	General Microbiology	(CHEM 122)	3	
BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 & Sr. Standing)	2	
BIOL	370	Developmental Biology	(BIOL 375)	4	
BIOL	373	Cell Biology	(BIOL 122 & CHEM 214 or 322)	3	
BIOL Electives (300 level or above) for a total of 37 credits in BIOL courses (see next page).				6	
SUPPORTING SCIENCES – 35-36 Credit Hours Required					
*MATH	220	Analytical Geometry & Calculus 1	(MATH 130 or by placement)	4	
*CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
*CHEM	122	General Chemistry 2	(CHEM 121)	5	
*CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
*CHEM	322	Organic Chemistry 2	(CHEM 322)	5	
CHEM	324 or 364	Fundamentals of Biochemistry Biochemistry	(CHEM 322) (CHEM 322)	3 4	
*PHYS	211	Introductory Physics 1	(MATH 120)	4	
*PHYS	212	Introductory Physics 2	(PHYS 211)	4	
BIOLOGY APPLICATION AREA - 5 Credit Hours Required (In addition to the course listed below, choose at least one more course from the list on the next page for a total of 5 credits. Additional credits in BIOL courses may also be used.)					
*MATH	251	Statistics for the Life Sciences	(MATH 130)	3	

ELECTIVES - 13-14 Credit Hours of courses to reach the minimum of 121 credits required for this degree.					
MGMT ACCT	310 or 201	Small Business Management (recommended) Principles of Financial Accounting (recommended)	(Sophomore Status) (MATH 109 or 110)	3	

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
*ENGL 150		3
*ENGL 250		3
ENGL 311 or 321 or 323		3
*COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
*200+ level		
*		
*		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
*Foundation PSYC 150		
*		
*200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course: *

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course: *

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with advisor):

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 472	Proteins	3
BIOL 301	Exercise Physiology	4	BIOL 370	Developmental Biology	4	BIOL 473	Proteins Laboratory	3
BIOL 310	Nutrition	3	BIOL 373	Cell Biology	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 330	Zoology	4	BIOL 407	Forensic DNA Analysis	3	BIOL 475	Bioinformatics	3
BIOL 340	Evolution	3	BIOL 421	Endocrinology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 343	Ornithology	3	BIOL 423	Neurobiology	3	BIOL 485	Biological Research	1-9
BIOL 344	Entomology	3	BIOL 453	Plant Physiology	4	BIOL 490	Special Topics in Biology	3-4
BIOL 345	Environmental Regulations	3	BIOL 470	Molecular Genetics	4	BIOL 492	Biology Internship	1-9
BIOL 348	Animal Behavior	3	BIOL 471	Recombinant DNA Lab	3	BIOL 497	Independent Study	1-6
BIOL 349	Medical Parasitology	3						

Application area (Consult with advisor): Any of the Biology electives above may be used. Other common classes taken include

RMLS 122	Responding to Emergencies	2	MRIS 102	Orientation to Medical Vocabulary	1 or
COHP 160	Nutrition for Healthy Living	3	MRIS 103	Medical Terminology	4
EDPE 338	Biomechanics	3			

Note: MCO will accept either STQM 260 or PSYC 210 as a substitute for MATH 251. However, only MATH 251 applies toward the B.S. in Biology.
Note: The Optometry Admission Test (OAT) is required for admission to MCO. Students should consider taking the OAT in early summer of the year prior to the year of entry into MCO. This test may be taken as often as desired without penalty imposed by MCO, however the OAT imposes mandatory wait periods between test dates. More information can be found at www.opted.org.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Current**

PRE-PHARMACY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY

Kim Ducat PHONE: (231) 591-2745 OFFICE: ASC 3085 E-MAIL: duca1@ferris.edu or
Jenice Winowiecki PHONE: (231) 591-2555 OFFICE: ASC 3024 E-MAIL: wino2@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

The following program presents the minimum entrance requirements of the College of Pharmacy and the requirements for the Bachelor of Science in Biology. Students may be eligible to apply if they have credit in specific courses as indicated on this checksheet. Admission to the College of Pharmacy is highly competitive, and the completion of this program does not ensure acceptance. Admission requirements for other schools of Pharmacy may vary.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency Requirement: 30 minimum FSU semester credits, at least 50% of credits in major must have a BIOL prefix and be earned at FSU.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one degree in Biology (either B.S. or B.A.) from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering the Pre-Pharmacy Concentration Fall Semester 2014 [Note: Courses marked with an asterisk satisfy the minimum admission requirements of the College of Pharmacy at Ferris State University.]

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 36 Credit Hours Required					
*BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
*BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
*BIOL	286 or 386	General Microbiology Microbiology and Immunology	(CHEM 122) (BIOL 322 & CHEM 214 or 321)	3 5	
*BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 & CHEM 122)	4	
*BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
*BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 & Sr. Standing)	2	
BIOL Electives (300 level or above) for a total of 36 credits in BIOL courses (see next page).				7-9	
BIOL	373 or 474	Cell Biology (recommended) Adv. Cell-Molecular Biol	(BIOL 122 & CHEM 214 or 322) (BIOL 375 & CHEM 364)	3	
SUPPORTING SCIENCES – 34-37 Credit Hours Required					
*MATH	220	Analytical Geometry & Calculus 1	(MATH 130 or by placement)	4	
*CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
*CHEM	122	General Chemistry 2	(CHEM 121)	5	
*CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
*CHEM	322	Organic Chemistry 2	(CHEM 321)	5	
*CHEM	324 or 364	Fundamentals of Biochemistry Biochemistry	(CHEM 322) (CHEM 322)	3 4	
*PHYS	211	Introductory Physics 1	(MATH 120)	4	
PHYS	212	Introductory Physics 2	(PHYS 211)	4	

BIOLOGY APPLICATION AREA - 5 Credit Hours Required (In addition to the course listed below, choose at least one more course from the list on the next page for a total of 5 credits. Additional credits in BIOL courses may also be used.)					
*MATH	251	Statistics for the Life Sciences	(MATH 130)	3	

ELECTIVES – 13-16 Credit Hours of courses to reach the minimum of 121 credits required for this degree.				

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
*ENGL 150		3
*ENGL 250		3
ENGL 311 or 321 or 323		3
*COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
*200+ level		
*		
*		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
*Foundation PSYC 150 or SOCY 121		
*ECON 221		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course: *

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course: *

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with advisor):

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 472	Proteins	3
BIOL 301	Exercise Physiology	4	BIOL 370	Developmental Biology	4	BIOL 473	Proteins Laboratory	3
BIOL 310	Nutrition	3	BIOL 373	Cell Biology	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 330	Zoology	4	BIOL 407	Forensic DNA Analysis	3	BIOL 475	Bioinformatics	3
BIOL 340	Evolution	3	BIOL 421	Endocrinology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 343	Ornithology	3	BIOL 423	Neurobiology	3	BIOL 485	Biological Research	1-9
BIOL 344	Entomology	3	BIOL 453	Plant Physiology	4	BIOL 490	Special Topics in Biology	3-4
BIOL 345	Environmental Regulations	3	BIOL 470	Molecular Genetics	4	BIOL 492	Biology Internship	1-9
BIOL 348	Animal Behavior	3	BIOL 471	Recombinant DNA Lab	3	BIOL 497	Independent Study	1-6
BIOL 349	Medical Parasitology	3						

Application Area (Consult with advisor): Any of the Biology electives above may be used. Other common classes taken include

CAHS 160	Nutrition for Healthy Living	3	RMLS 122	Responding to Emergencies	2	MRIS 102	Orientation to Med Vocab	1 or
EDPE 338	Biomechanics	3				MRIS 103	Medical Terminology	4

Note: The Pharmacy Admission Test (PCAT) is required for admission to the College of Pharmacy. Students should consider taking the PCAT in the summer of the year prior to the year of entry. More information can be found at www.pcatweb.info.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Proposed**

PRE-PHARMACY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY

Kim Ducat PHONE: (231) 591-2745 OFFICE: ASC 3085 E-MAIL: duca1@ferris.edu or
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Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA.

The following program presents the minimum entrance requirements of the College of Pharmacy and the requirements for the Bachelor of Science in Biology. Students may be eligible to apply if they have credit in specific courses as indicated on this checksheet. Admission to the College of Pharmacy is highly competitive, and the completion of this program does not ensure acceptance. Admission requirements for other schools of Pharmacy may vary.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency Requirement: 30 minimum FSU semester credits, at least 50% of credits in major must have a BIOL prefix and be earned at FSU.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. Biology degree from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering the Pre-Pharmacy Concentration Fall Semester 2015 [Note: Courses marked with an asterisk satisfy the minimum admission requirements of the College of Pharmacy at Ferris State University.]

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 36 Credit Hours Required					
*BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
*BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
*BIOL	286 or	General Microbiology	(CHEM 122)	3	
	386	Microbiology and Immunology	(BIOL 322 & CHEM 214 or 321)	5	
*BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 & CHEM 122)	4	
*BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
BIOL	346 or	Ecological Assessment	(BIOL 122)	3	
	347 or	Environmental Conservation	(BIOL 122)		
	442	Ecology	(BIOL 122)		
*BIOL	375	Principles of Genetics	(BIOL 122)	3	
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 & Sr. Standing)	2	
BIOL Electives (300 level or above) for a total of 36 credits in BIOL courses (see next page).				7-9	
BIOL	373 or	Cell Biology (recommended)	(BIOL 122 & CHEM 214 or 322)	3	
	474	Adv. Cell-Molecular Biol	(BIOL 375 & CHEM 364)		
SUPPORTING SCIENCES – 34-37 Credit Hours Required					
*MATH	220	Analytical Geometry & Calculus 1	(MATH 130 or by placement)	4	
*CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
*CHEM	122	General Chemistry 2	(CHEM 121)	5	
*CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
*CHEM	322	Organic Chemistry 2	(CHEM 321)	5	
*CHEM	324 or	Fundamentals of Biochemistry	(CHEM 322)	3	
	364	Biochemistry	(CHEM 322)	4	
*PHYS	211	Introductory Physics 1	(MATH 120)	4	
PHYS	212	Introductory Physics 2	(PHYS 211)	4	

BIOLOGY APPLICATION AREA - 5 Credit Hours Required (In addition to the course listed below, choose at least one more course from the list on the next page for a total of 5 credits. Additional credits in BIOL courses may also be used.)					
*MATH	251	Statistics for the Life Sciences	(MATH 130)	3	
ELECTIVES – 13-16 Credit Hours of courses to reach the minimum of 121 credits required for this degree.					

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
*ENGL 150		3
*ENGL 250		3
ENGL 311 or 321 or 323		3
*COMM 121 program requirement		3
TOTAL		

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
*200+ level		
*		
*		
TOTAL		

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
*Foundation PSYC 150 or SOCY 121		
*ECON 221		
TOTAL		

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course: *

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course: *

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with advisor):

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 472	Proteins	3
BIOL 301	Exercise Physiology	4	BIOL 370	Developmental Biology	4	BIOL 473	Proteins Laboratory	3
BIOL 310	Nutrition	3	BIOL 373	Cell Biology	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 330	Zoology	4	BIOL 407	Forensic DNA Analysis	3	BIOL 475	Bioinformatics	3
BIOL 340	Evolution	3	BIOL 421	Endocrinology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 343	Ornithology	3	BIOL 423	Neurobiology	3	BIOL 485	Biological Research	1-9
BIOL 344	Entomology	3	BIOL 453	Plant Physiology	4	BIOL 490	Special Topics in Biology	3-4
BIOL 345	Environmental Regulations	3	BIOL 470	Molecular Genetics	4	BIOL 492	Biology Internship	1-9
BIOL 348	Animal Behavior	3	BIOL 471	Recombinant DNA Lab	3	BIOL 497	Independent Study	1-6
BIOL 349	Medical Parasitology	3						

Application Area (Consult with advisor): Any of the Biology electives above may be used. Other common classes taken include

COHP 160	Nutrition for Healthy Living	3	RMLS 122	Responding to Emergencies	2	MRIS 102	Orientation to Med Vocab	1 or
EDPE 338	Biomechanics	3				MRIS 103	Medical Terminology	4

Note: The Pharmacy Admission Test (PCAT) is required for admission to the College of Pharmacy. Students should consider taking the PCAT in the summer of the year prior to the year of entry. More information can be found at www.pcatweb.info.

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Current**

PRE-PHYSICAL THERAPY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. Daisy Daubert
PHONE: (231) 591-2554 OFFICE: ASC 2012 E-MAIL: dauberd@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

Successful completion of a Bachelor of Science in Biology and a minimum of 100 hours of observational experience in a physical therapy setting will satisfy the minimum admission requirements of most professional physical therapy programs. Admission to these programs is highly competitive. You are expected to consult with both your FSU advisor and the college to which you intend to complete physical therapy to develop the most appropriate academic plan.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. or B.A. degree in Biology from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering Pre-Physical Therapy Fall Semester 2014

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 37 Credit Hours of Required Courses					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 & CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
BIOL	286	General Microbiology	(CHEM 122)	3	
BIOL	375	Genetics	(BIOL 122)	3	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	460	Current Topics in Biology	(ENGL 311 or ENGL 321 and Senior Standing)	2	
BIOL	300	Pathophysiology	(BIOL 205 or 322 & CHEM 214 or 321)	3	
BIOL	301	Exercise Physiology	(BIOL 205 or BIOL 322)	4	
BIOL Electives (300 level or above) for a total of 37 credits in BIOL courses (see next page).				3	
SUPPORTING SCIENCES – 29 Credit Hours of Required Courses					
MATH	130	Advanced Algebra & Analytical Trigonometry	(MATH 120 or by placement)	4	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	214	Fundamentals of Organic Chemistry	(CHEM 122)	4	
CHEM	324	Fundamentals of Biochemistry	(CHEM 214)	3	
PHYS	211	Introductory Physics 1	(MATH 120)	4	
PHYS	212	Introductory Physics 2	(PHYS 211)	4	
BIOLOGY APPLICATION AREA – 6 Credit Hours of Required Courses					
MATH	251	Statistics for the Life Sciences	(MATH 130)	3	
MRIS	102	Orientation to Medical Vocabulary		1	
RMLS	122	Responding to Emergencies		2	

ELECTIVES - 20 Credit Hours of courses to reach the minimum of 121 credits required for this degree.				

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog:

http://www.ferris.edu/htmls/academics/gened/courses.html

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
TOTAL		

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
PHIL 320 recommended		
TOTAL		

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
PSYC 150 recommended		3
SOCY 121 recommended		3
PSYC 226 recommended		3
PSYC 422 recommended		3
TOTAL		

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with Advisor):

BIOL 310	Nutrition	3	BIOL 370	Developmental Biology	4	BIOL 472	Proteins	3
BIOL 330	Zoology	4	BIOL 373	Cell Biology	3	BIOL 473	Proteins Laboratory	3
BIOL 340	Evolution	3	BIOL 407	Forensic DNA Analysis	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 343	Ornithology	3	BIOL 421	Endocrinology	3	BIOL 475	Bioinformatics	3
BIOL 344	Entomology	3	BIOL 423	Neurobiology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 345	Environmental Regulations	3	BIOL 453	Plant Physiology	4	BIOL 485	Biological Research	1-9
BIOL 348	Animal Behavior	3	BIOL 470	Molecular Genetics	4	BIOL 490	Special Topics in Biology	3-4
BIOL 349	Medical Parasitology	3	BIOL 471	Recombinant DNA Lab	3	BIOL 492	Biology Internship	1-9
BIOL 350	Plants and Fungi	4				BIOL 497	Independent Study	1-6

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Proposed**

PRE-PHYSICAL THERAPY
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. Daisy Daubert
PHONE: (231) 591-2554 OFFICE: ASC 2012 E-MAIL: dauberd@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA.

Successful completion of a Bachelor of Science in Biology and a minimum of 100 hours of observational experience in a physical therapy setting will satisfy the minimum admission requirements of most professional physical therapy programs. Admission to these programs is highly competitive. You are expected to consult with both your FSU advisor and the college to which you intend to complete physical therapy to develop the most appropriate academic plan.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. Biology degree from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering Pre-Physical Therapy Fall Semester 2015

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 37 Credit Hours of Required Courses					
BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 & CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
BIOL	286	General Microbiology	(CHEM 122)	3	
BIOL	375	Genetics	(BIOL 122)	3	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	460	Current Topics in Biology	(ENGL 311 or ENGL 321 and Senior Standing)	2	
BIOL	300	Pathophysiology	(BIOL 205 or 322 & CHEM 214 or 321)	3	
BIOL	301	Exercise Physiology	(BIOL 205 or BIOL 322)	4	
BIOL Electives (300 level or above) for a total of 37 credits in BIOL courses (see next page).				3	
SUPPORTING SCIENCES – 29 Credit Hours of Required Courses					
MATH	130	Advanced Algebra & Analytical Trigonometry	(MATH 120 or by placement)	4	
CHEM	121	General Chemistry 1	(MATH 115 and prior Chemistry class)	5	
CHEM	122	General Chemistry 2	(CHEM 121)	5	
CHEM	214	Fundamentals of Organic Chemistry	(CHEM 122)	4	
CHEM	324	Fundamentals of Biochemistry	(CHEM 214)	3	
PHYS	211	Introductory Physics 1	(MATH 120)	4	
PHYS	212	Introductory Physics 2	(PHYS 211)	4	
BIOLOGY APPLICATION AREA – 6 Credit Hours of Required Courses					
MATH	251	Statistics for the Life Sciences	(MATH 130)	3	
MRIS	102	Orientation to Medical Vocabulary		1	
RMLS	122	Responding to Emergencies		2	

ELECTIVES - 20 Credit Hours of courses to reach the minimum of 121 credits required for this degree.				

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog:

http://www.ferris.edu/htmls/academics/gened/courses.html

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
PHIL 320 recommended		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
PSYC 150 recommended		3
SOCY 121 recommended		3
PSYC 226 recommended		3
PSYC 422 recommended		3
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with Advisor):

BIOL 310	Nutrition	3	BIOL 370	Developmental Biology	4	BIOL 472	Proteins	3
BIOL 330	Zoology	4	BIOL 373	Cell Biology	3	BIOL 473	Proteins Laboratory	3
BIOL 340	Evolution	3	BIOL 407	Forensic DNA Analysis	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 343	Ornithology	3	BIOL 421	Endocrinology	3	BIOL 475	Bioinformatics	3
BIOL 344	Entomology	3	BIOL 423	Neurobiology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 345	Environmental Regulations	3	BIOL 453	Plant Physiology	4	BIOL 485	Biological Research	1-9
BIOL 348	Animal Behavior	3	BIOL 470	Molecular Genetics	4	BIOL 490	Special Topics in Biology	3-4
BIOL 349	Medical Parasitology	3	BIOL 471	Recombinant DNA Lab	3	BIOL 492	Biology Internship	1-9
BIOL 350	Plants and Fungi	4				BIOL 497	Independent Study	1-6

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Current**

PRE-VETERINARY MEDICINE
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. James Scott
PHONE: (231) 591-2620 OFFICE: ASC 2018 E-MAIL: scottj@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.0 overall GPA including an English and mathematics course or they will be considered as first year students.

A minimum of 240 hours of veterinary experience under the direction of your local veterinarian will satisfy the admission requirements of the College of Veterinary Medicine at Michigan State University. Requirements for other schools of veterinary medicine may vary.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. or B.A. degree in Biology from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering the Pre-Veterinary Medicine Concentration Fall Semester 2014

(Note: Those courses marked with an asterisk will satisfy the minimum admission requirements of the College of Veterinary Medicine at Michigan State University. In addition, a minimum of two courses in Cultural Enrichment, two courses in Social Awareness, and one course in English composition are required as a minimum for admission into that program. Requirements for other schools of veterinary medicine may vary.)

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 38 Credit Hours of Required Courses					
*BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
*BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
*BIOL	310	Nutrition	(BIOL 122 & either CHEM 214 or CHEM 322)	3	
BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 & CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
*BIOL	373	Cell Biology	(BIOL 122 and CHEM 322)	3	
*BIOL	375	Principles of Genetics	(BIOL 122)	3	
*BIOL	386	Microbiology and Immunology	(BIOL 322 & CHEM 214 or 321)	5	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 & Sr. Standing)	2	
BIOL Electives (300 level or above) for a total of 38 credits in BIOL courses (see next page).				Min. of 3	
SUPPORTING SCIENCES – 36 Credit Hours of Required Courses.					
*MATH	130	Advanced Algebra/Analytical Trigonometry	(MATH 120 or by placement)	4	
*CHEM	121	General Chemistry 1	(MATH 115 and Prior Chemistry Class)	5	
*CHEM	122	General Chemistry 2	(CHEM 121)	5	
*CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
*CHEM	322	Organic Chemistry 2	(CHEM 322)	5	
*CHEM	364	Biochemistry	(CHEM 322)	4	
*PHYS	211	Introductory Physics 1	(MATH 120)	4	
*PHYS	212	Introductory Physics 2	(PHYS 211)	4	
BIOLOGY APPLICATION AREA - 5 Credit Hours Required (In addition to the course listed below, choose at least one more course from the list on the next page for a total of 5 credits. Additional credits in BIOL courses may also be used.)					

ELECTIVES - 14 Credit Hours of courses to reach the minimum of 121 credits required for this degree.				

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
Foundation		
200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with Advisor)

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 472	Proteins	3
BIOL 301	Exercise Physiology	3	BIOL 370	Developmental Biology	4	BIOL 473	Proteins Laboratory	3
BIOL 330	Zoology	4	BIOL 407	Forensic DNA Analysis	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 340	Evolution	3	BIOL 421	Endocrinology	3	BIOL 475	Bioinformatics	3
BIOL 343	Ornithology	3	BIOL 423	Neurobiology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 344	Entomology	3	BIOL 453	Plant Physiology	4	BIOL 485	Biological Research	1-9
BIOL 345	Environmental Regulations	3	BIOL 470	Molecular Genetics	4	BIOL 490	Special Topics in Biology	3-4
BIOL 348	Animal Behavior	3	BIOL 471	Recombinant DNA Lab	3	BIOL 492	Biology Internship	1-9
BIOL 349	Medical Parasitology	3				BIOL 497	Independent Study	1-6

Application Area (Consult with advisor): Any of the Biology electives above may be used. Other common classes taken include

CAHS 160	Nutrition for Healthy Living	3	MATH 251	Statistics for the Life Sciences	3	MRIS 102	Orientation to Med Vocab	1 or
EDPE 338	Biomechanics	3	RMLS 122	Responding to Emergencies	2	MRIS 103	Medical Terminology	4

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

ID: Name: **Form D - Proposed**

PRE-VETERINARY MEDICINE
BACHELOR OF SCIENCE IN BIOLOGY

FERRIS STATE UNIVERSITY
Lead Advisor: Dr. James Scott
PHONE: (231) 591-2620 OFFICE: ASC 2018 E-MAIL: scottj@ferris.edu

Admission requirements: First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose. High school courses and grade point average, ACT composite score, and ACT Mathematics and Reading sub scores will be considered in the admission and course placement process. Transfer students must have at least 12 credits at the time of application with a minimum 2.5 overall GPA.

A minimum of 240 hours of veterinary experience under the direction of your local veterinarian will satisfy the admission requirements of the College of Veterinary Medicine at Michigan State University. Requirements for other schools of veterinary medicine may vary.

Graduation Requirements:
1. 2.0 CUMULATIVE Grade Point Average in all coursework.
2. No grade lower than C- in courses that apply to major, supporting sciences, and biology application area.
3. Residency requirement: 30 minimum FSU semester credits, at least 50% FSU semester credits in major.
4. Minimum of 40 credits numbered 300 or higher.
5. 121 minimum semester credits including general education requirements.
6. Students may earn only one B.S. Biology degree from Ferris State University.

Number of 300+ Credits: _____

Program Requirements: Effective for students entering the Pre-Veterinary Medicine Concentration Fall Semester 2015

(Note: Those courses marked with an asterisk will satisfy the minimum admission requirements of the College of Veterinary Medicine at Michigan State University. In addition, a minimum of two courses in Cultural Enrichment, two courses in Social Awareness, and one course in English composition are required as a minimum for admission into that program. Requirements for other schools of veterinary medicine may vary.)

REQUIRED		COURSE TITLE –See FSU catalog course descriptions for prerequisites not indicated below		Credits	Grade
MAJOR – 38 Credit Hours of Required Courses					
*BIOL	121	General Biology 1	(CHEM 121 concurrent)	4	
*BIOL	122	General Biology 2	(BIOL 121 & CHEM 121)	4	
*BIOL	310	Nutrition	(BIOL 122 & either CHEM 214 or CHEM 322)	3	
BIOL	321	Human Physiology and Anatomy 1	(BIOL 122 & CHEM 122)	4	
BIOL	322	Human Physiology and Anatomy 2	(BIOL 321)	4	
*BIOL	373	Cell Biology	(BIOL 122 and CHEM 322)	3	
*BIOL	375	Principles of Genetics	(BIOL 122)	3	
*BIOL	386	Microbiology and Immunology	(BIOL 322 & CHEM 214 or 321)	5	
BIOL	346 or 347 or 442	Ecological Assessment Environmental Conservation Ecology	(BIOL 122) (BIOL 122) (BIOL 122)	3	
BIOL	460	Current Topics in Biology	(ENGL 311, 321 or 323 & Sr. Standing)	2	
BIOL Electives (300 level or above) for a total of 38 credits in BIOL courses (see next page).				Min. of 3	
SUPPORTING SCIENCES – 36 Credit Hours of Required Courses.					
*MATH	130	Advanced Algebra/Analytical Trigonometry	(MATH 120 or by placement)	4	
*CHEM	121	General Chemistry 1	(MATH 115 and Prior Chemistry Class)	5	
*CHEM	122	General Chemistry 2	(CHEM 121)	5	
*CHEM	321	Organic Chemistry 1	(CHEM 122)	5	
*CHEM	322	Organic Chemistry 2	(CHEM 322)	5	
*CHEM	364	Biochemistry	(CHEM 322)	4	
*PHYS	211	Introductory Physics 1	(MATH 120)	4	
*PHYS	212	Introductory Physics 2	(PHYS 211)	4	
BIOLOGY APPLICATION AREA - 5 Credit Hours Required (In addition to the course listed below, choose at least one more course from the list on the next page for a total of 5 credits. Additional credits in BIOL courses may also be used.)					

ELECTIVES - 14 Credit Hours of courses to reach the minimum of 121 credits required for this degree.				

GENERAL EDUCATION REQUIREMENTS

Courses which qualify in the Scientific Understanding (Z), Cultural Enrichment (C) and Social Awareness (S) categories are delineated in the General Education section of the FSU electronic catalog: **http://www.ferris.edu/htmls/academics/gened/courses.html**

A. COMMUNICATION COMPETENCE 12 Sem Credits		
Course	Grade	Credit
ENGL 150		3
ENGL 250		3
ENGL 311 or 321 or 323		3
COMM 121 program requirement		3
	TOTAL	

B. SCIENTIFIC UNDERSTANDING 7 Sem Credits
This requirement is achieved in the program major.

C. QUANTITATIVE SKILLS
This requirement is achieved in the program major.

D. CULTURAL ENRICHMENT 9 Sem Credits		
Only approved "C" courses may count toward this category. Requirements: 1) one course must be 200+ level, 2) maximum 5 credit hours of music and/or theater activities may apply		
Course	Grade	Credit
200+ level		
	TOTAL	

E. SOCIAL AWARENESS 9 Sem Credits		
Only approved "S" courses may count toward this category. Requirements: 1) two different subject areas including at least one "foundation" course, 2) one course must be 200+ level		
Course	Grade	Credit
Foundation		
200+ level		
	TOTAL	

F. GLOBAL CONSCIOUSNESS
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

G. RACE/ETHNICITY/GENDER
Each student must complete one course from the list of qualifying courses presented in the FSU catalog. This course may also count toward fulfilling the Cultural Enrichment or Social Awareness requirement.
Course:

Note: To complete this program in four years, students must average 15-16 credit hours per semester. Students MUST consult their faculty advisor to develop a course sequence plan appropriate to their academic development and educational plans.

Biology Electives (Consult with Advisor)

BIOL 300	Pathophysiology	3	BIOL 350	Plants and Fungi	4	BIOL 472	Proteins	3
BIOL 301	Exercise Physiology	4	BIOL 370	Developmental Biology	4	BIOL 473	Proteins Laboratory	3
BIOL 330	Zoology	4	BIOL 407	Forensic DNA Analysis	3	BIOL 474	Adv. Cell/Mol. Biology	3
BIOL 340	Evolution	3	BIOL 421	Endocrinology	3	BIOL 475	Bioinformatics	3
BIOL 343	Ornithology	3	BIOL 423	Neurobiology	3	BIOL 476	Adv. Techniques Biotechnology	2
BIOL 344	Entomology	3	BIOL 453	Plant Physiology	4	BIOL 485	Biological Research	1-9
BIOL 345	Environmental Regulations	3	BIOL 470	Molecular Genetics	4	BIOL 490	Special Topics in Biology	3-4
BIOL 348	Animal Behavior	3	BIOL 471	Recombinant DNA Lab	3	BIOL 492	Biology Internship	1-9
BIOL 349	Medical Parasitology	3				BIOL 497	Independent Study	1-6

Application Area (Consult with advisor): Any of the Biology electives above may be used. Other common classes taken include

COHP 160	Nutrition for Healthy Living	3	MATH 251	Statistics for the Life Sciences	3	MRIS 102	Orientation to Med Vocab	1 or
EDPE 338	Biomechanics	3	RMLS 122	Responding to Emergencies	2	MRIS 103	Medical Terminology	4

NOTICE REGARDING WITHDRAWAL, RE-ADMISSION AND INTERRUPTION OF STUDIES

Students who return to the university after an interrupted enrollment (not including summer semester) must normally meet the requirements of the curriculum which are in effect at the time of their return, not the requirements which were in effect when they were originally admitted.

Form D - Current

CELL AND MOLECULAR BIOLOGY MINOR

FERRIS STATE UNIVERSITY - COLLEGE OF ARTS AND SCIENCES

ADVISOR: Dr. Bradley Isler

PHONE: (231) 591-2641 E-MAIL: islerb@ferris.edu CAMPUS ADDRESS: ASC 2113

Why Choose the Cell and Molecular Biology Minor?

This minor is designed for students who desire to expand their understanding of biology in the rapidly developing field of cell and molecular biology. It is also suitable for students who have completed substantial courses in a pre-professional degree, but who have not yet been accepted into their chosen professional school. Cell and Molecular Biology is also suitable for students who may choose to pursue a Bachelor's degree in chemistry, especially one with an emphasis in biochemistry.

Admission Requirements

This Cell and Molecular Biology minor is open to any student admitted to Ferris State and pursuing a baccalaureate degree.

Graduation Requirements

An academic minor may only be awarded upon completion of a baccalaureate degree at Ferris State.
Students must have at least a "C" grade in all BIOL courses and a minimum of 21 credits. At least 50% of the credits of the minor must be Ferris State University credits.

Required Courses		
BIOL 121	General Biology 1	4
BIOL 122	General Biology 2	4
BIOL 375	Principles of Genetics	3
BIOL 470	Molecular Genetics	4
BIOL 472	Proteins	3
BIOL 474	Advanced Cell/Molecular Biology	3

COLLEGE OF ARTS AND SCIENCES - ACADEMIC MINOR CLEARANCE FORM

MINOR IN CELL AND MOLECULAR BIOLOGY

NAME_____ STUDENT NUMBER _____

STUDENT'S COLLEGE: _____ B.S./B.A. PROGRAM: _____

Procedures:

1) The student and the advisor for this minor will review and complete the General Requirements and Required Courses sections of this form (Section A).
2) Upon completion of Section A, this form will be sent to the department office for approval. The original form will be filed in the appropriate office (either the advisor or the department) and copied for the student. Students in Bachelor of Arts degree programs must also provide a copy of this form to both the B.A. coordinator and their faculty advisor. All deviations from or substitutions for courses listed in this original plan must be approved by the Department Head on official Course Substitution Forms and must accompany this form.
3) Upon completion of this minor, the student will notify the advisor of the minor. The department and the advisor will verify that the student has completed the minor and will forward the original form to the College of Arts and Sciences Dean's Office for approval and from there it will be forwarded either to the Registrar's Office (Section B) or to the B.A. coordinator as appropriate.

SECTION A

General Requirements:

1) At least 50% of the credits of the minor must be numbered 300 or higher
2) At least 50% of the credits of the minor must be Ferris State University credits
3) This minor requires a minimum of 21 credits
4) This minor requires a minimum GPA of 2.0 in these courses. No grade lower than "C" is acceptable for this minor.
5) A minor will not be entered in the academic record until the student has been certified for a bachelor's degree

Required Courses	Credit Hours	Grade	Semester Completed
BIOL 121	4		
BIOL 122	4		
BIOL 375	3		
BIOL 470	4		
BIOL 472	3		
BIOL 474	3		

Signatures		Date
Student		
Advisor		
Department		

SECTION B

Routing (FOLLOWING COMPLETION OF THE REQUIRED COURSES FOR THE MINOR)		Date
Department		
CAS Dean		
Registrar		

DECLARATION SENT TO RECORDS _____ COMPLETION SENT TO RECORDS _____

Form D - Proposed

CELL AND MOLECULAR BIOLOGY MINOR

FERRIS STATE UNIVERSITY - COLLEGE OF ARTS AND SCIENCES

ADVISOR: Dr. Bradley Isler

PHONE: (231) 591-2641 E-MAIL: BradleyIsler@ferris.edu CAMPUS ADDRESS: ASC 2113

Why Choose the Cell and Molecular Biology Minor?

This minor is designed for students who desire to expand their understanding of biology in the rapidly developing field of cell and molecular biology. It is also suitable for students who have completed substantial courses in a pre-professional degree, but who have not yet been accepted into their chosen professional school. Cell and Molecular Biology is also suitable for students who may choose to pursue a Bachelor's degree in chemistry, especially one with an emphasis in biochemistry.

Admission Requirements

This Cell and Molecular Biology minor is open to any student admitted to Ferris State and pursuing a baccalaureate degree.

Graduation Requirements

An academic minor may only be awarded upon completion of a baccalaureate degree at Ferris State.
Students must have at least a "C" grade in all BIOL courses and a minimum of 20 credits. At least 50% of the credits of the minor must be Ferris State University credits.

Required Courses		
BIOL 375	Principles of Genetics	3
BIOL 370	Developmental Biology	4
BIOL 470	Molecular Genetics	4
BIOL 472	Proteins	3
BIOL 474	Advanced Cell/Molecular Biology	3
BIOL 475	Bioinformatics	3

COLLEGE OF ARTS AND SCIENCES - ACADEMIC MINOR CLEARANCE FORM

MINOR IN CELL AND MOLECULAR BIOLOGY

NAME_____ STUDENT NUMBER _____

STUDENT'S COLLEGE: _____ B.S./B.A. PROGRAM: _____

Procedures:

1) The student and the advisor for this minor will review and complete the General Requirements and Required Courses sections of this form (Section A).
2) Upon completion of Section A, this form will be sent to the department office for approval. The original form will be filed in the appropriate office (either the advisor or the department) and copied for the student. Students in Bachelor of Arts degree programs must also provide a copy of this form to both the B.A. coordinator and their faculty advisor. All deviations from or substitutions for courses listed in this original plan must be approved by the Department Head on official Course Substitution Forms and must accompany this form.
3) Upon completion of this minor, the student will notify the advisor of the minor. The department and the advisor will verify that the student has completed the minor and will forward the original form to the College of Arts and Sciences Dean's Office for approval and from there it will be forwarded either to the Registrar's Office (Section B) or to the B.A. coordinator as appropriate.

SECTION A

General Requirements:

1) At least 50% of the credits of the minor must be numbered 300 or higher
2) At least 50% of the credits of the minor must be Ferris State University credits
3) This minor requires a minimum of 20 credits
4) This minor requires a minimum GPA of 2.0 in these courses. No grade lower than "C" is acceptable for this minor.
5) A minor will not be entered in the academic record until the student has been certified for a bachelor's degree

Required Courses	Credit Hours	Grade	Semester Completed
BIOL 375	3		
BIOL 370	4		
BIOL 470	4		
BIOL 472	3		
BIOL 474	3		
BIOL 475	3		

Signatures		Date
Student		
Advisor		
Department		

SECTION B

Routing (FOLLOWING COMPLETION OF THE REQUIRED COURSES FOR THE MINOR)		Date
Department		
CAS Dean		
Registrar		

DECLARATION SENT TO RECORDS _____ COMPLETION SENT TO RECORDS _____

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐**Prefix (current) BIOL** ☐**Number (current)101 Contact Hours (current):** Lecture = 3 Lab =2

Lecture ☒Lab ☒ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Prefix (proposed)** ☐**Number (proposed) Contact Hours (proposed):**

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Title (current):Genetics: Human Aspects**

☐ **Title (proposed):**

☐**Credit Hours (current):4** ☐**Prerequisites (current): None**☐**Co-requisites (current):**

☐**Credit Hours (proposed):** ☐**Prerequisites (proposed):** ☐**Co-requisites (proposed):**

☒**Course Description (current) 125 words maximum:** The emphasis is fundamental genetic principles and concepts and how these apply to individuals within our culture and society as a whole. Topics include transmission of inherited traits, chromosomal abnormalities, gene structure and function, genes in populations and genetic implications of cancer, genetic engineering, evolution, eugenics and bioethics. Designed for non-science majors; not applicable to the applied biology major. This course meets General Education requirements: Scientific Understanding, Lab. Typically Offered Fall, Spring, Summer

☒**Course Description (proposed) 125 words maximum: The emphasis is fundamental genetic principles and concepts and how these apply to individuals within our culture and society as a whole. Topics include transmission of inherited traits, chromosomal abnormalities, gene structure and function, genes in populations and genetic implications of cancer, genetic engineering, evolution, eugenics and bioethics. Designed for non-science majors; not applicable towards biology program requirements.**

☐**Course Outcomes and Assessment Plan (current):**

Scientific Knowledge	Students analyze information to address questions concerning Mendelian, molecular, or population genetics. Assessed via quizzes and exams.
Scientific Method	Students apply genetic concepts to formulate experimental hypotheses and predict the results of experiments set up to test those hypotheses. Assessed via quizzes and exams.
Critical Thinking	Students critically interpret scientific articles of a popular nature and formulate an informed opinion. Assessed via lab exercises and quizzes.
Communication	Students clearly communicate an accurate interpretation of scientific findings to others in a verbal or written manner. Assessed via lab exercises.

☐**Course Outcomes and Assessment Plan (proposed):**

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
1	Introduction
2	Cells and chromosomes
3	Mitosis
4	No Class
5	Meiosis
6	Meiosis
7	Patterns of inheritance: monohybrid cross
8	Patterns of inheritance: dihybrid cross
9	Autosomal recessive traits
10	Autosomal dominant traits
11	Sex Linkage
12	**Exam 1**
13	Multiple alleles, linkage, and variations in gene expression
14	Development
15	Sex differentiation
16	X inactivation, sex-influenced traits, and sex-limited traits
17	Polyploidy and aneuploidy
18	Variation in chromosome structure
19	DNA
20	Chromosomes and DNA replication
21	RNA, transcription, and the genetic code

22	Translation and proteins
23	**Exam 2**
24	Metabolic pathways and disease
25	Metabolic pathways and disease
26	Recombinant DNA
27	DNA fingerprinting and RFLP analysis
28	Mutation
29	DNA repair and genomic imprinting
30	Mutagens
31	Genes and cancer
32	Genes and cancer
33	**Exam 3**
34	Genes and the immune system
35	Genes and the immune system
36	Polygenes
37	Polygenes
38	Behavioral genetics
39	NO CLASS
40	Genes in populations
41	Genes in populations
42	Human diversity and evolution
43	Genetic screening and counseling
44	**Exam 4**
45	Biotechnology and society
	Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐**Prefix (current) BIOL** ☐**Number (current)103 Contact Hours (current):** Lecture = 3 Lab =3

Lecture ☒Lab ☒ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Prefix (proposed)** ☐**Number (proposed) Contact Hours (proposed):**

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Title (current):Biological Concepts**

☐ **Title (proposed):**

☐**Credit Hours (current):4** ☐**Prerequisites (current):** ☐**Co-requisites (current):**

☐**Credit Hours (proposed):** ☐**Prerequisites (proposed):** ☐**Co-requisites (proposed):**

☒**Course Description (current) 125 words maximum:** This course is a broad overview of the field of biology, for non-biology majors. The various fields and levels of biology will be presented with an emphasis on the basic principles underlying all areas and all levels of biology. This course is suitable for students needing a general introduction to biology, for students in elementary education, or for students preparing to take the majors biology course, BIOL 121-122. This course meets the Scientific Understanding requirement for general education. Typically Offered Fall, Spring, Summer

☒**Course Description (proposed) 125 words maximum: This course is a broad overview of the field of biology, for non-biology majors. The various fields and levels of biology will be presented with an emphasis on the basic principles underlying all areas and all levels of biology. This course is suitable for students needing a general introduction to biology, for students in elementary education, or for students preparing to take the introductory majors biology course BIOL 121 and 122.**

☐**Course Outcomes and Assessment Plan (current):**

Scientific Knowledge	Students analyze information to address questions concerning biological information and evolution, development and homeostasis, or energy and resources. Assessed via exams and lab quizzes.
Scientific Method	Students apply biological concepts to formulate experimental hypotheses and predict the results of experiments set up to test those hypotheses. Assessed via lab quizzes and exercises.
Critical Thinking	Students critically interpret scientific articles of a popular nature and formulate an informed opinion. Assessed via lab exercises and exams.
Communication	Students clearly communicate an accurate interpretation of scientific findings to others in a verbal or written manner. Assessed via lab exercises and quizzes.

☐**Course Outcomes and Assessment Plan (proposed):**

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
1	Introduction/ Intro Chemistry
2	Biological molecules
3	Cell structure
4	Membranes
5	Membranes
6	Energy and enzymes
7	Energy and enzymes
8	**Exam 1**
9	Energy and enzymes
10	Cellular Respiration
11	Photosynthesis
12	Photosynthesis
13	Mitosis
14	Meiosis
15	Meiosis
16	**Exam 2**
17	Mendel
18	Inheritance
19	Inheritance
20	DNA Structure and Replication
21	Making Proteins
22	Making Proteins
23	Biotechnology
24	Biotechnology
25	**Exam 3**
26	Evolution
27	Microevolution
28	Microevolution
29	Speciation and Classification
30	Speciation and Classification
31	Bacteria
32	Protists
33	Fungi
34	Fungi
35	**Exam 4**
36	Plants
37	Animal Diversity

38	Animal Diversity
39	Animal Diversity
40	Population Ecology
41	Population Ecology
42	Community Ecology
43	Community Ecology
44	Ecosystem Ecology
45	Ecosystem Ecology
	Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐Prefix (current) BIOL ☐Number (current)109 Contact Hours (current): Lecture = 3 Lab =2

Lecture ☒Lab ☒ Seminar ☐ [Enter contact hours per week in blank above.]

☐Prefix (proposed) ☐Number (proposed) Contact Hours (proposed):

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐Title (current):Basic Human Anatomy/Physiology

☐ Title (proposed):

☐Credit Hours (current):4 ☐Prerequisites (current): None☐Co-requisites (current):

☐Credit Hours (proposed): ☐Prerequisites (proposed): ☐Co-requisites (proposed):

☒Course Description (current) 125 words maximum: An introductory course designed to provide students with a basic understanding of the structural organization and functions of the major systems of the human body. Laboratories provide opportunities to observe various anatomical parts and investigate physiological phenomena. For non-science students and is not applicable toward the applied biology major. This course meets General Education requirements: Scientific Understanding, Lab. Typically Offered Fall, Spring

☒Course Description (proposed) 125 words maximum: **An introductory course designed to provide students with a basic understanding of the structural organization and functions of the major systems of the human body. Laboratories provide opportunities to observe various anatomical parts and investigate physiological phenomena. For non-science students and is not applicable towards biology program requirements.**

☐Course Outcomes and Assessment Plan (current):

Scientific Knowledge	Students analyze information to address questions concerning the structure and function of anatomical features or organ systems in health or disease. Assessed using quizzes and exams.
Scientific Method	Students apply anatomical or physiological concepts to formulate experimental hypotheses and predict the results of experiments set up to test those hypotheses. Assessed using quizzes, and exams, and lab exercises.
Critical Thinking	Students critically interpret scientific articles of a popular nature and formulate an informed opinion. Assessed using quizzes, and exams, and lab exercises.
Communication	Students clearly communicate an accurate interpretation of scientific findings to others in a verbal or written manner. Assessed using quizzes, and exams, and lab exercises.

☐Course Outcomes and Assessment Plan (proposed):

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	TOPIC
1.50	Introduction to the Human body
3.00	The Chemistry of Life
4.50	Cell Structures and Their Functions
6.00	**Exam 1,** Cell Structures and their Functions
7.50	Tissues, Glands, and Membranes
9.00	"
10.5	The Integumentary System
12.00	**Exam 2,** The Skeletal System
13.50	The Skeletal System
15.00	The Muscular System
16.50	Nervous Tissue, Action Potentials, Reflexes
18.00	**Exam 3,** Nervous Tissue, Action Potentials, Reflexes
19.50	The Central Nervous System
21.00	Peripheral Nervous System
22.50	Autonomic Nervous System
24.00	**Exam 4,** The Senses
25.50	The Senses
27.00	The Endocrine System
28.50	The Cardiovascular System: Blood
30.00	**Exam 5** The Cardiovascular System: The Heart
31.50	The Cardiovascular System: The Heart

33.00	The Cardiovascular System:
34.50	The Cardiovascular System
36.00	**Exam 6,** The Respiratory System
37.50	The Respiratory System
39.00	The Respiratory System
40.50	The Digestive System, Nutrition and Metabolism
42.00	Urinary System
43.50	The Male Reproductive System
45.00	The Female Reproductive System
	Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐**Prefix (current) BIOL** ☐**Number (current)111 Contact Hours (current):** Lecture = 3 Lab =2

Lecture ☒Lab ☒ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Prefix (proposed)** ☐**Number (proposed) Contact Hours (proposed):**

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Title (current):Environmental Biology**

☐ **Title (proposed):**

☐**Credit Hours (current):4** ☐**Prerequisites (current): None**☐**Co-requisites (current):**

☐**Credit Hours (proposed):** ☐**Prerequisites (proposed):** ☐**Co-requisites (proposed):**

☒**Course Description (current) 125 words maximum:** A Fundamental principles of biology as they apply to people, their health, as individual organisms, as species, and as a part of a functioning ecosystem. Designed for non-science majors; not applicable to the applied biology major. This course meets General Education requirements: Scientific Understanding, Lab. Typically Offered Fall, Spring, Summer

☒**Course Description (proposed) 125 words maximum: Fundamental principles of biology as they apply to people, their health, as individual organisms, as species, and as a part of a functioning ecosystem. Designed for non-science majors; not applicable towards biology program requirements.**

☐**Course Outcomes and Assessment Plan (current):**

Scientific Knowledge	Students analyze information to address questions concerning ecological systems that make up our environment and impacts that humans may have upon these systems.
Scientific Method	Students apply environmental biology concepts to formulate experimental hypotheses and predict the results of experiments set up to test those hypotheses.
Critical Thinking	Students critically interpret scientific articles of a popular nature and formulate an informed opinion.
Communication	Students clearly communicate an accurate interpretation of scientific findings to others in a verbal or written manner.

☐**Course Outcomes and Assessment Plan (proposed):**

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
1.5	Syllabus, Text, and Introduction
3	Sustainability, Scientific Method, Environmental Ethics
4.5	Population Dynamics and Humans
6	Population Dynamics and Humans
7.5	Chemistry and molecules
9	Molecules, energy, respiration and photosynthesis
10.5	Molecules, energy, respiration and photosynthesis
12	***Exam 1***
13.5	Population genetics and natural selection
15	Ecosystem cycles and Climate Change
16.5	Climate change and soil
18	Soil processes and farming
19.5	Water and water cycles
21	Streams and water pollution
22.5	Wastewater Management
24	***Exam 2***
25.5	Energy pr tion
27	Acid rain and air quality
28.5	Solid waste management
30	Renewable energy – wind and hydroelectric
31.5	Non-renewable resources – mining and fracking
33	***Exam 3***
34.5	Groundwater and water rights
36	Groundwater and water rights
37.5	Environment and human health
39	Environment and human health
40.5	Environment and human health
42	Environment and human health
43.5	Invasive species
45	***Exam 4***
	Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐**Prefix (current) BIOL** ☐**Number (current)116 Contact Hours (current):** Lecture = 3 Lab =2

Lecture ☒Lab ☒ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Prefix (proposed)** ☐**Number (proposed) Contact Hours (proposed):**

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Title (current):Nature Study**

☐ **Title (proposed):**

☐**Credit Hours (current):4** ☐**Prerequisites (current): None**☐**Co-requisites (current):**

☐**Credit Hours (proposed):** ☐**Prerequisites (proposed):** ☐**Co-requisites (proposed):**

☒**Course Description (current) 125 words maximum:** Great Lakes flora and fauna are studied, with emphasis on ecological relationships and environmental impacts. Fisheries and wildlife management principles are also discussed. Open to recreation and outdoor activities directors, teachers needing updating in natural science, lifelong learning adults and others interested in the out-of-doors. Not applicable to the applied biology major. Some hiking required. This course meets General Education requirements: Scientific Understanding, Lab. Typically Offered On Demand

☒**Course Description (proposed) 125 words maximum: Great Lakes flora and fauna are studied, with emphasis on ecological relationships and environmental impacts. Fisheries and wildlife management principles are also discussed. Open to recreation and outdoor activities directors, teachers needing updating in natural science, lifelong learning adults and others interested in the out-of-doors. Not applicable towards biology program requirements. Some hiking required.**

☐**Course Outcomes and Assessment Plan (current):**

Scientific Knowledge	Students analyze information to identify the flora, fauna, and habitats of Michigan and explain the interconnectedness among biotic and abiotic factors within these settings.
Scientific Method	Students apply ecological concepts to formulate experimental hypotheses and predict the results of experiments set up to test those hypotheses.
Critical Thinking	Students critically interpret scientific articles of a popular nature and formulate an informed opinion.
Communication	Students clearly communicate an accurate interpretation of scientific findings to others in a verbal or written manner.

☐**Course Outcomes and Assessment Plan (proposed):**

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hours	Lecture Topic
1.5	Class Introduction, Syllabus Discussion, Index Cards, Notes: Nature Observations, Journaling, & Sketching – "My Nature Spot" Project Explanation
3	Seating Chart Notes: Landscape Shapers of Michigan's Northwoods – An Overview (glaciers, climate, fire, winter/seasons, & humans)
4.5	Fungus, Lichens, Plants ('Trees of Michigan' book)
6	Plants & Trees of MI ('Trees of Michigan')
7.5	Michigan Habitats, Biomes, Succession
9	Ecology I: populations, communities, species interactions
10.5	Ecology II: four spheres, energy flow, biogeochemical cycles +
12	Ecology III: biodiversity & invasive/exotic organisms
13.5	Ecology IV: conservation/management
15	Ecology cont'd
16.5	EXAM I
18	Intro. to Aquatic Environments + Lakes ('Pond Life' book pp. 4-30)
19.5	Lakes cont'd + Kingdom Protista (P.L. pp. 74-76)
21	[Invertebrates &] Arthropods: characteristics + classification ('Insect Guide' pp. 4-13
22.5	EXAM II

24	Nature Journal entries 1-5 are due in your lab section!
25.5	Fish I ('Freshwater Fish' pp. 1-7)
27	Fish II (pp. 7-24)
28.5	Fish III (pp. 24-35)
30	Amphibians I ('Reptiles & Amphibians' pp. iv-1 + CD)
31.5	Amphibians II
33	Reptiles I
34.5	Reptiles II
36	EXAM III
37.5	Birds I ('Birds of Michigan')
39	Birds II
40.5	Mammals I ('Mammals of MI')
42	Mammals II
43.5	Mammals III
45	EXAM IV
	COMPREHENSIVE FINAL EXAM

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐**Prefix (current) BIOL** ☐**Number (current)121 Contact Hours (current):** Lecture = 3 Lab =3

Lecture ☒Lab ☒ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Prefix (proposed)** ☐**Number (proposed) Contact Hours (proposed):**

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Title (current):General Biology 1**

☐ **Title (proposed):**

☐**Credit Hours (current):4** ☐**Prerequisites (current):** CHEM 121(concurrent)☐**Co-requisites (current):**

☐**Credit Hours (proposed):** ☐**Prerequisites (proposed):** ☐**Co-requisites (proposed):**

☒**Course Description (current) 125 words maximum:** The first semester of a year-long sequence in introductory biology designed for the science major and as a prerequisite for advanced biology courses. The topics include an introduction to scientific thinking, ecology, cell division, Mendelian genetics, evolution, and the diversity of the biological kingdoms (Bacteria, Protista, Fungi and Plantae), and plant structure and function. Laboratory exercises are designed to enhance the lecture material with hands-on experiences. Designed for students in science baccalaureate degree programs. CHEM 114 or CHEM 121 may be taken in the same semester as BIOL 121 with department approval. This course meets General Education requirements: Scientific Understanding, Lab. Pre-Requisites:CHEM 121 (may be taken concurrently). Typically Offered Fall, Spring, Summer

☒**Course Description (proposed) 125 words maximum: The first semester of a year-long sequence in introductory biology designed for the science major and as a prerequisite for advanced biology courses. The topics include an introduction to scientific thinking, ecology, cell division, Mendelian genetics, evolution, and the diversity of the biological kingdoms (Bacteria, Protista, Fungi and Plantae), and plant structure and function. Laboratory exercises are designed to enhance the lecture material with hands-on experiences. Designed for students in science baccalaureate degree programs.**

☐**Course Outcomes and Assessment Plan (current):**

Scientific Knowledge * Students will demonstrate a majors-level introductory knowledge in ecology, cell division, Mendelian genetics, evolution, the diversity of the biological kingdoms (bacteria, Protista, Fungi, and Plantae), and plant structure and function.

Problem Solving * Students will demonstrate the ability to use mathematics to solve problems in Biology and utilize graphs or tables to present data effectively.

Scientific Method * Students will use the scientific method to formulate hypotheses, design experiments, collect and analyze data, and draw conclusions

Lab Skills * Students will show an ability to utilize equipment such as a microscope) safely and effectively to complete lab assignments.

☐**Course Outcomes and Assessment Plan (proposed):**

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Lecture topic
1	biology and science
2	
3	
4	ecology intro
5	
6	populations
7	
8	communities
9	
10	**exam 1**
11	
12	ecosystems
13	
14	cell division
15	
16	genes
17	
18	
19	chromosomes
20	Darwin and evolution
21	
22	**exam 2**
23	population genetics
24	speciation
25	history of life
26	
27	systematics
28	
29	Bacteria and Archaea
30	
31	Protista

32	Fungi
33	plant kingdom
34	**exam 3**
35	
36	plant anatomy
37	
38	plant transport
39	
40	
41	plant nutrition
42	
43	Plant responses and viruses
44	
45	
	Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐**Prefix (current) BIOL** ☐**Number (current)122 Contact Hours (current):** Lecture = 3 Lab =3

Lecture ☒Lab ☒ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Prefix (proposed)** ☐**Number (proposed) Contact Hours (proposed):**

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Title (current):General Biology 2**

☐ **Title (proposed):**

☐**Credit Hours (current):4** ☐**Prerequisites (current): BIOL 121 (C- or better) and CHEM 121 (C- or better)** ☐**Co-requisites (current):**

☐**Credit Hours (proposed):** ☐**Prerequisites (proposed):** ☐**Co-requisites (proposed):**

☒**Course Description (current) 125 words maximum:** The second semester of a year-long sequence in introductory biology. The topics covered include molecular biology, cell biology (including bioenergetics and metabolism), molecular genetics, diversity of the Kingdom Animalia, and animal structure and function. Laboratory exercises are designed to enhance the lecture material with hands-on experiences. Designed for students in science baccalaureate programs. This course meets General Education requirements: Scientific Understanding, Lab. Pre-Requisites: BIOL 121 with a C- grade or better and CHEM 121 with a C- grade or better. Typically Offered Spring, Summer

☒**Course Description (proposed) 125 words maximum: The second semester of a year-long sequence in introductory biology. The topics covered include molecular biology, cell biology (including bioenergetics and metabolism), molecular genetics, diversity of the Kingdom Animalia, and animal structure and function. Laboratory exercises are designed to enhance the lecture material with hands-on experiences. Designed for students in science baccalaureate programs.**

☐**Course Outcomes and Assessment Plan (current):**

Scientific Knowledge * Students will demonstrate a majors-level introductory knowledge in molecular biology, cell biology (including bioenergetics and metabolism), molecular genetics, the diversity of Kingdom Animalia, and animal structure and function.

Problem Solving * Students will demonstrate the ability to use mathematics to solve problems in Biology and utilize graphs or tables to present data effectively.

Scientific Method * Students will use the scientific method to formulate hypotheses, design experiments, collect and analyze data, and draw conclusions.

Lab Skills * Students will show an ability to utilize equipment such as a microscope) safely and effectively to complete lab assignments.

☐**Course Outcomes and Assessment Plan (proposed):**

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
1	The Chemical Context of Life
2	The Chemical Context of Life
3	Water and Life
4	Water and Life
5	Carbon and the Molecular Diversity of Life
6	The Structure and Function of Large Biological Molecules
7	The Structure and Function of Large Biological Molecules
8	The Structure and Function of Large Biological Molecules
9	A Tour of the Cell
10	A Tour of the Cell
11	A Tour of the Cell
12	Membrane Structure and Function
13	Membrane Structure and Function
14	Introduction to Metabolism
15	**Exam 1**
16	Introduction to Metabolism
17	Cellular Respiration and Fermentation
18	Cellular Respiration and Fermentation
19	Cellular Respiration and Fermentation
20	Photosynthesis
21	Photosynthesis
22	The Molecular Basis of Inheritance
23	The Molecular Basis of Inheritance
24	**Exam 2**
25	From Gene to Protein
26	From Gene to Protein
27	An Overview of Animal Diversity
28	An Introduction to Invertebrates
29	An Introduction to Invertebrates
30	An Introduction to Invertebrates
31	An Introduction to Invertebrates
32	The Origin and Evolution of Vertebrates
33	The Origin and Evolution of Vertebrates

34	The Origin and Evolution of Vertebrates
35	The Origin and Evolution of Vertebrates
36	**Exam 3**
37	Basic Principles of Animal Form and Function
38	Basic Principles of Animal Form and Function
39	Basic Principles of Animal Form and Function
40	Animal Nutrition
41	Animal Nutrition
42	Animal Nutrition
43	Circulation and Gas Exchange
44	Circulation and Gas Exchange
45	Hormones and the Endocrine System
	Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐**Prefix (current) BIOL** ☐**Number (current)286 Contact Hours (current):** Lecture = 2 Lab =3

Lecture ☒Lab ☒ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Prefix (proposed)** ☐**Number (proposed) Contact Hours (proposed):**

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Title (current):General Microbiology**

☐ **Title (proposed):**

☐**Credit Hours (current):3** ☐**Prerequisites (current): CHEM 122 (C- or better)** ☐**Co-requisites (current):**

☐**Credit Hours (proposed):** ☐**Prerequisites (proposed):** ☐**Co-requisites (proposed):**

☒**Course Description (current) 125 words maximum:** Introduction to the microbial world including microbial structure, function, metabolism, classification, genetics, control of microbial growth and immunity. The laboratory provides practical experience with fundamental concepts, techniques and instrumentation. This course is designed for students in the clinical laboratory science program and is open to other students by permission of the professor. This course meets General Education requirements: Scientific Understanding, Lab. Pre-Requisites: CHEM 122 with a C- grade or better. Typically Offered Spring Only

☒**Course Description (proposed) 125 words maximum: Introduction to the microbial world including microbial structure, function, metabolism, classification, genetics, control of microbial growth and immunity. The laboratory provides practical experience with fundamental concepts, techniques and instrumentation.**

☐**Course Outcomes and Assessment Plan (current):**

Scientific Knowledge Students will apply, analyze, and evaluate information related to microbial diversity, metabolism, genetics, and pathogenesis.

Critical Thinking * Students will be able to work in groups to accurately collect, analyze, interpret, and report scientific data based upon observations from laboratory exercises or clinical case studies.

Lab Skills * Students will be proficient in standard microbiological laboratory skills, including aseptic technique, staining, microscopy, and biochemical characterization.

Communication * Students will demonstrate an ability to work in group settings and exchange ideas concerning course-related topics.

☐**Course Outcomes and Assessment Plan (proposed):**

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
	Course introduction and orientation
	Scope and History of Microbiology
1.5	
3	Observing Microbes
4.5	Microbial Cells
6	Prokaryotic Diversity
7.5	Eukaryotic Diversity
9	Virus Structure and Function
10.5	**LECTURE EXAM ONE**
12	Bacterial Growth
13.5	Environmental Influences on Growth
15	Catabolism
16.5	Respiration, Lithotrophy, and Photolysis
18	Food and Industrial Microbiology
19.5	Microbial Ecology
21	**LECTURE EXAM TWO**
22.5	Microbial Genomes
24	Gene Expression
25.5	Molecular Regulation 1
27	Molecular Regulation 2
28.5	Gene Transfer and Mutagenesis
30	Viruses and the Mobilome
31.5	**LECTURE EXAM THREE**
33	Chemotherapy
34.5	Innate Immune Defenses
36	
37.5	Adaptive Immune Defenses
39	Hypersensitivities and Vaccines
40.5	Microbial Pathogenesis
42	Microbial Diseases
43.5	**COMPREHENSIVE FINAL EXAM**
45	

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐**Prefix (current) BIOL** ☐**Number (current)300 Contact Hours (current):** Lecture = 3 Lab =0

Lecture ☒ Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Prefix (proposed)** ☐**Number (proposed) Contact Hours (proposed):**

Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Title (current):Pathophysiology**

☐ **Title (proposed):**

☐**Credit Hours (current):3** ☒**Prerequisites (current): BIOL 205 or BIOL 322 with a grade of C- or better and CHEM 124 or CHEM 214 or CHEM 321 with a grade of C- or better.** ☐**Co-requisites (current):**

☐**Credit Hours (proposed):** ☒**Prerequisites (proposed): BIOL 205 or BIOL 322 with a grade of C- or better and CHEM 214 or CHEM 321 with a grade of C- or better.**☐**Co-requisites (proposed):**

☒**Course Description (current) 125 words maximum:** A study of general principles and causes of disease and resultant abnormal physiological functions of the organ systems. Included are discussions on cancer, aging, inflammation, stress, cardiovascular, nervous, respiratory, endocrine, excretory, digestive and musculoskeletal system dysfunction. Designed for students in allied health baccalaureate degree programs. This course meets General Education requirements: Scientific Understanding. Pre-Requisites:BIOL 205 or BIOL 322 with a grade of C- or better and CHEM 124 or CHEM 214 or CHEM 321 with a grade of C- or better. Typically Offered Fall, Spring, Summer

☒**Course Description (proposed) 125 words maximum:** A study of general principles and causes of disease and resultant abnormal physiological functions of the organ systems. Included are discussions on cancer, aging, inflammation, stress, cardiovascular, nervous, respiratory, endocrine, excretory, digestive and musculoskeletal system dysfunction.

☐**Course Outcomes and Assessment Plan (current):**

Scientific Knowledge	Students will explain and illustrate the general mechanisms of disease in humans.
Critical Thinking	Students will analyze and predict the effects of disease on normal human physiology.
Communication	Students will demonstrate an ability to work in group settings and exchange ideas concerning course-related topics.

☐**Course Outcomes and Assessment Plan (proposed):**

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
1.5	Introduction to pathophysiology and cellular pathophysiology
3	Cellular pathophysiology continued
4.5	Cellular pathophysiology continued
6	Inflammation
7.5	Inflammation continued and tissue repair
9	The immune system
10.5	Altered immunity
12	**EXAM 1**
13.5	Infection
15	Genetic and developmental disorders
16.5	Genetic and developmental disorders continued
18	Neoplasia
19.5	Neoplasia continued
21	**EXAM 2**
22.5	Altered ventilation and diffusion
24	Altered perfusion
25.5	Altered perfusion continued
27	Altered hormonal and metabolic regulation
28.5	Altered hormonal and metabolic regulation continued
30	**EXAM 3**
31.5	Altered fluid, electrolyte and acid-base balance
33	Altered fluid, electrolyte and acid-base balance continued
34.5	Altered neuronal transmission
36	Altered neuronal transmission continued
37.5	Altered somatic and sensory function
39	Altered elimination
40.5	Altered elimination continued
42	**EXAM 4**
43.5	Altered nutrition and reproductive function
45	Aging
	Final Exam

☐ **Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐Prefix (current) BIOL ☐Number (current)340 Contact Hours (current): Lecture = 3 Lab =0

Lecture ☒Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐Prefix (proposed) ☐Number (proposed) Contact Hours (proposed):

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐Title (current):Evolution

☐ Title (proposed):

☐Credit Hours (current):3 ☐Prerequisites (current): BIOL 122 with a grade of C- or better. ☐Co-requisites (current):

☐Credit Hours (proposed): ☐Prerequisites (proposed): ☐Co-requisites (proposed):

☒Course Description (current) 125 words maximum: The study of the process of evolution, including the origin of species and fossil evidence in the geological record. Considers evidence of evolutionary relationships, including molecular homologies recently discovered by genome projects, the evolution of metabolic pathways, symbiotic relationships and the evolution of eukaryotes. This course meets General Education requirements: Scientific Understanding and Writing Intensive Course. Prerequisites: BIOL 122 with a grade of C- or better. Typically offered Fall, Spring and Summer.

☒Course Description (proposed) 125 words maximum: **The study of the process of evolution, including the origin of species and fossil evidence in the geological record. Considers evidence of evolutionary relationships, including molecular homologies recently discovered by genome projects, the evolution of metabolic pathways, symbiotic relationships and the evolution of eukaryotes.**

☐Course Outcomes and Assessment Plan (current):

Scientific Knowledge *	Students will be able to summarize the evidence for organic evolution, the theories that have been offered to explain how evolution has occurred, and the fundamental principles in the study of evolution.
Critical Thinking *	Students will be able to analyze the relationships between biological organisms and consider the evidence of evolutionary relationships, including molecular homologies that have been recently discovered by genome projects, the evolution of metabolic pathways, symbiotic relationships and the evolution of eukaryotes.
Scientific Reasoning *	Students will be able to explain how biologists think, and demonstrate skills in critical thinking, reasoning, and expressing their reasoning orally and in writing.

☐Course Outcomes and Assessment Plan (proposed):

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
1.5	1. The Emergence of Evolutionary Thought
3	2. Science and Critical Thinking
4.5	3. Considering some arguments which have been presented against
6	4. Plate Tectonics, continental drift; fossil formation
7.5	6. Origin of Life and the Precambrian Fossil Record
9	6. Origin of Life and the Precambrian Fossil Record
10.5	6. Origin of Life and the Precambrian Fossil Record
12	7. Emergence of Eukaryotes
13.5	7. Emergence of Eukaryotes
15	8. The Organization of Life, and Eukaryotic Themes
16.5	8. The Organization of Life, and Eukaryotic Themes
18	8. The Organization of Life, and Eukaryotic Themes
19.5	9. Genetics and Evolution
21	9. Genetics and Evolution
22.5	10. Adaptation and Speciation
24	10. Adaptation and Speciation
25.5	Mid-Term Examination
27	11. Evolution of Animals
28.5	12. Evolution of early vertebrates
30	13. Leaving the Water
31.5	13. Leaving the Water
33	14. Origin of Land Plants
34.5	14. Origin of Land Plants
36	14. Origin of Land Plants
37.5	16. Evolution of Flight and Warm-Blooded Dinosaurs
39	17. Extinction, 18. Evolution of Mammals
40.5	17. Extinction, 18. Evolution of Mammals
42	19. Evolution of Primates and Hominoids
43.5	19. Becoming Human

45 19. Becoming Human

Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐Prefix (current) BIOL ☐Number (current)348 Contact Hours (current): Lecture = 3 Lab =0

Lecture ☒Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐Prefix (proposed) ☐Number (proposed) Contact Hours (proposed):

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐Title (current):Animal Behavior

☐ Title (proposed):

☐Credit Hours (current):3 ☐Prerequisites (current): BIOL 122 with a grade of C- or better. ☐Co-requisites (current):

☐Credit Hours (proposed): ☐Prerequisites (proposed): ☐Co-requisites (proposed):

☒Course Description (current) 125 words maximum: In this course, we explore the diversity of animal behavior in order to understand how behavior is organized and controlled, how it develops, why it is performed, and why it takes a particular form. Natural selection is a major theme with emphasis on viewing behavior as a species attribute, following the approach of comparative ethology, and as an individual attribute, interpreting behavior to be a ""strategy"" that contributes to an organism's fitness. Prerequisites: BIOL 122 with a grade of C- or better. Typically Offered Spring only.

☒Course Description (proposed) 125 words maximum: **In this course, we explore the diversity of animal behavior in order to understand how behavior is organized and controlled, how it develops, why it is performed, and why it takes a particular form. Natural selection is a major theme with emphasis on viewing behavior as a species attribute, following the approach of comparative ethology, and as an individual attribute, interpreting behavior to be a "strategy" that contributes to an organism's fitness.**

☐Course Outcomes and Assessment Plan (current):

Scientific Knowledge *	Students will be able to identify and explain the main concepts of Animal Behavior (learning, spatial distribution, foraging, sexual selection, parental care, mating systems, conflict, altruism, and communication).
Scientific Method *	Students will explain and apply the scientific method and techniques used by researchers in the field.
Communication *	Students will effectively write about topics related to animal behavior.

☐Course Outcomes and Assessment Plan (proposed):

☐Course Outline including Time Allocation (current):

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Lecture
1	Introduction
2	History of the Study of Behavior
3	History of the Study of Behavior
4	History of the Study of Behavior
5	Genetic Analysis of Behavior
6	Genetic Analysis of Behavior
7	Genetic Analysis of Behavior
8	Natural Selection and Behavior
9	Learning and Cognition
10	Physiological Analysis - Nerves
11	Physiological Analysis - Nerves
12	**Exam I**
13	Physiological Analysis - Hormones
14	Physiological Analysis - Hormones
15	Development of Behavior
16	Development of Behavior
17	Biological Clocks
18	Biological Clocks
19	Mechanisms of Orientation and Navigation
20	Mechanisms of Orientation and Navigation
21	Mechanisms of Orientation and Navigation
22	Ecology and Evolution of Spatial Distribution
23	Ecology and Evolution of Spatial Distribution
24	**Exam II**
25	Foraging Behavior
26	Antipredator Behavior
27	Sexual Selection
28	Sexual Selection
29	Sexual Selection
30	Sexual Selection
31	Parental Care and Mating Systems
32	Parental Care and Mating Systems
33	**Exam III**
34	Conflict
35	Conflict

36	Conflict
37	Group Living, Altruism, and Cooperation
38	Group Living, Altruism, and Cooperation
39	Group Living, Altruism, and Cooperation
40	Communication: Channels and Functions
41	Communication: Channels and Functions
42	Communication: Channels and Functions
43	Evolution of Communication
44	Evolution of Communication
45	**Exam IV**
	Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐Prefix (current) BIOL ☐Number (current)370 Contact Hours (current): Lecture = 3 Lab =3

Lecture ☒Lab ☒ Seminar ☐ [Enter contact hours per week in blank above.]

☐Prefix (proposed) ☐Number (proposed) Contact Hours (proposed):

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐Title (current):Developmental Biology

☐ Title (proposed):

☐Credit Hours (current):4 ☒Prerequisites (current): BIOL 122 with a grade of C- or better. ☐Co-requisites (current):

☐Credit Hours (proposed): ☒Prerequisites (proposed): BIOL 375 with a grade of C- or better☐Co-requisites (proposed):

☒Course Description (current) 125 words maximum: A study of the fundamental principles of development and the mechanisms responsible. An examination of the morphological changes which occur during development in vertebrates. Designed for students in science baccalaureate degree programs. This course meets General Education requirements: Scientific Understanding, Lab. Pre-Requisites:BIOL 122 with a grade of C- or better. Typically Offered Spring Only

☒Course Description (proposed) 125 words maximum: **A study of the fundamental principles of development and the mechanisms responsible. An examination of the morphological changes which occur during development in vertebrates.**

☐Course Outcomes and Assessment Plan (current):

Scientific Knowledge *	Students will be able to identify and explain the major mechanisms guiding the development of organisms, how the field as progressed through history, and the medical and environmental impacts of research in this field.
Scientific Method *	Students will utilize the scientific method to address questions in Developmental Biology.
Lab Skills *	Students will proficiently use laboratory instruments and critically interpret the observations of serial sections as well as whole mounts of embryos during development.

☐Course Outcomes and Assessment Plan (proposed):

☐Course Outline including Time Allocation (current):

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
1	Developmental Anatomy
2	Developmental Anatomy
3	Developmental Genetics
4	Developmental Genetics
5	Developmental Genetics
6	Developmental Genetics
7	Cell-Cell Communication in Development
8	Cell-Cell Communication in Development
9	The Saga of the Germ Line (Gametogenesis)
10	The Saga of the Germ Line (Gametogenesis)
11	Review
12	**Exam 1**
13	Fertilization
14	Fertilization
15	Early invertebrate development
16	Early invertebrate development
17	Drosophila development
18	Drosophila development

19	Early Development of Amphibians and Fish
20	Early Development of Amphibians and Fish
21	Early Development of Amphibians and Fish
22	Review
23	**Exam 2**
24	Early Development of Birds and Mammals
25	Early Development of Birds and Mammals
26	Central Nervous System and Epidermis Development (Ectoderm Development)
27	Central Nervous System and Epidermis Development (Ectoderm Development)
28	Neural Crest cells
29	Paraxial and Intermediate Mesoderm (Muscle, bones, and Kidney Development)
30	Paraxial and Intermediate Mesoderm (Muscle, bones, and Kidney Development)
31	Lateral Plate Mesoderm (Heart Development) and Endoderm (Development of Lung, Pharynx, Gut, Thyroid Glands, Liver, Stomach, Gallbladder, and Pancreas)
32	Lateral Plate Mesoderm (Heart Development) and Endoderm (Development of Lung, Pharynx, Gut, Thyroid Glands, Liver, Stomach, Gallbladder, and Pancreas)
33	Lateral Plate Mesoderm (Heart Development) and Endoderm (Development of Lung, Pharynx, Gut, Thyroid Glands, Liver, Stomach, Gallbladder, and Pancreas)
34	Review
35	**Exam 3**
36	Tetrapod limb development
37	Tetrapod limb development

38	Sex Determination
39	Sex Determination
40	Metamorphosis
41	Metamorphosis
42	Metamorphosis
43	Medical Aspects of Developmental Biology
44	Medical Aspects of Developmental Biology
45	Review
	Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐**Prefix (current) BIOL** ☐**Number (current)373 Contact Hours (current):** Lecture =3, Lab =0

Lecture ☒Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Prefix (proposed)** ☐**Number (proposed) Contact Hours (proposed):**

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Title (current):Cell Biology**

☐ **Title (proposed):**

☐**Credit Hours (current):3** ☒**Prerequisites (current):** BIOL 122 with a grade of C- or better and CHEM 124 or CHEM 214 or CHEM 322 with a grade of C- or better. ☐**Co-requisites (current):**

☐**Credit Hours (proposed):** ☒**Prerequisites (proposed):** BIOL 122 with a grade of C- or better and CHEM 214 or CHEM 322 with a grade of C- or better.☐**Co-requisites (proposed):**

☐**Course Description (current) 125 words maximum:** A study of ultra structure and function of cellular components, including major classes of biologically important molecules, energy transformation, membranes, signaling, the role of cytoskeleton, the cell cycle and apoptosis. This course meets General Education requirements: Scientific Understanding. Pre-requisites: BIOL 122 with a grade of C- or better and CHEM 124 or CHEM 214 or CHEM 322 with a grade of C- or better. Typically Offered Fall Only

☐**Course Description (proposed) 125 words maximum:** This upper-level cell biology course examines many of the coordinated mechanisms by which cellular components interact with each other for a cell to function properly. Major topics that will be covered include structure, function, and biosynthesis of biological membranes; cytoskeletal systems and cellular movements; cell communication and growth; and oncogenic transformation.

☐**Course Outcomes and Assessment Plan (current):**

Course Objectives: At the completion of this course students will be able to:	**Means of assessing students**
• Describe the biological membranes and other eukaryotic cell components and their major functions of the cell.	**In class group discussions, written exams** that utilize short answers and fill in the blanks; complete written analysis of **case studies.**
• Connect the mechanisms by which the various cellular components interact with how they are regulated.	**In class group discussions , written exams** that utilize short answers and fill in the blanks; complete written analysis and **oral presentations.**
• Apply key concepts of cell biology to analyze contemporary issues.	Complete written analysis utilizing **in class group discussions, oral presentation** and written analysis of **case studies.**
• Describe and apply knowledge of selected techniques used in cell and molecular biology research.	**Written exams** that utilize long answers, multiple choice, matching, fill in the blanks and **oral presentations.**

☐**Course Outcomes and Assessment Plan (proposed):**

☐**Course Outline including Time Allocation (current):**

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
1.5	Introduction
3	Membrane Structure, Function and Chemistry
4.5	Membrane Structure, Function and Chemistry
6	Transport Across Membranes
7.5	Transport Across Membranes
9	The Endomembrane System and Peroxisomes
10.5	The Endomembrane System and Peroxisomes
12	**Class presentations and discussion**
13.5	**EXAM 1**
15	Protein Targeting and Sorting
16.5	Glycolysis, Fermentation and Gluconeogenesis
18	Glycolysis, Fermentation and Gluconeogenesis
19.5	Aerobic Respiration
21	Aerobic Respiration
22.5	Photosynthesis
24	Photosynthesis
27	**Class presentations and discussion**
28.5	**CUMULATIVE EXAM 2**
30	Signal Transduction Mechanisms
31.5	Signal Transduction Mechanisms
33	Cytoskeletal Systems and Cellular Movement
34.5	Cytoskeletal Systems and Cellular Movement
36	Cell Adhesions, Cell Junctions, and Extracellular Structures
37.5	**Class presentations and discussion**
39	**CUMULATIVE EXAM 3**
40.5	The Cell Cycle
42	Cancer Cells
43.5	**Class presentations**
	CUMULATIVE FINAL EXAM

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

☒**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐Prefix (current) BIOL ☐Number (current)421 Contact Hours (current): Lecture = 3 Lab =0

Lecture ☒Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐Prefix (proposed) ☐Number (proposed) Contact Hours (proposed):

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐Title (current):Endocrinology

☐ Title (proposed):

☐Credit Hours (current):3 ☐Prerequisites (current): BIOL 205 or BIOL 322 with a grade of C- or better ☐Co-requisites (current):

☐Credit Hours (proposed): ☐Prerequisites (proposed): ☐Co-requisites (proposed):

☒Course Description (current) 125 words maximum: An in-depth investigation of vertebrate (particularly human) endocrinology. Topics will include hormone structure, hormone synthesis, the mechanisms of hormone action, endocrine disruptors, and the roles of hormones in calcium metabolism, digestive physiology, reproduction, growth, and the stress and sympathetic responses. The hormones of the major endocrine glands will be investigated. There will also be an introduction to various techniques used in endocrinological research. This course includes the reading and understanding of primary scientific literature. Prerequisites: Biol 205 or Biol 322 with a grade of C- or better.Typically Offered Fall only.

☒Course Description (proposed) 125 words maximum: **An in-depth investigation of vertebrate (particularly human) endocrinology. Topics will include hormone structure, hormone synthesis, the mechanisms of hormone action, endocrine disruptors, and the roles of hormones in calcium metabolism, digestive physiology, reproduction, growth, and the stress and sympathetic responses. The hormones of the major endocrine glands will be investigated. There will also be an introduction to various techniques used in endocrinological research. This course includes the reading and understanding of primary scientific literature.**

☐Course Outcomes and Assessment Plan (current):

Scientific knowledge *	Students will apply, analyze, and evaluate information regarding the field of endocrinology (hormone structure, mechanisms of hormone action, hormone/receptor interactions, specifics of mammalian hormone systems).
Scientific Literature *	Students will demonstrate the ability to access, understand, and critique articles from the scientific literature.
Communication *	Students will demonstrate (with necessary improvements) the ability to effectively write about endocrinology-related topics.

☐Course Outcomes and Assessment Plan (proposed):

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
1.5	Introduction
3	Introduction
4.5	Pituitary Gland
6	Thyroid Gland
7.5	Adrenal Glands
9	Adrenal Glands
10.5	Principles of Hormonal Integration
12	Hormones of the Gastrointestinal Tract
13.5	**EXAM**
15	Hormones of the Gastrointestinal Tract
16.5	The Pancreatic Islets
18	Hormonal Regulation of Fuel Metabolism
19.5	Hormonal Regulation of Fuel Metabolism
21	Diet and Health
22.5	Diet and Health
24	Diet and Health
25.5	Regulation of Salt and Water Balance
27	Hormonal Regulation of Calcium Balance
28.5	**EXAM**
30	Hormonal Control of Growth
31.5	Hormonal Control of Reproduction in the Male
33	Hormonal control of Reproduction in the

	Female: The Menstrual Cycle
34.5	Hormonal Control of Pregnancy and Lactation
36	Hormonal Control of Pregnancy and Lactation
37.5	Menopausal Estrogen Therapy
39	Menopausal Estrogen Therapy
40.5	**EXAM**
42	Menopausal Estrogen Therapy
43.5	Menopausal Estrogen Therapy
45	Menopausal Estrogen Therapy
	Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

COURSE INFORMATION FORM

FORM E

Effective Fall 2015

Complete all items below (New or Current)

Check all boxes where modifications are being made.

Course Identification

☐**Prefix (current) BIOL** ☐**Number (current)475 Contact Hours (current):** Lecture = 3 Lab =0

Lecture ☒Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Prefix (proposed)** ☐**Number (proposed) Contact Hours (proposed):**

Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank above.]

☐**Title (current):Bioinformatics**

☐ **Title (proposed):**

☐**Credit Hours (current):3** ☐**Prerequisites (current): BIOL 375 with a grade of C- or better** ☐**Co-requisites (current):**

☐**Credit Hours (proposed):** ☐**Prerequisites (proposed):** ☐**Co-requisites (proposed):**

☒**Course Description (current) 125 words maximum:** A study of the interface between biotechnology and information technology. Primary focus will be placed on the use of nucleic acid and protein databases in the modern molecular sciences. Prerequisites: BIOL 375 with a grade of C- or better. Typically Offered Spring Only.

☒**Course Description (proposed) 125 words maximum: A study of the interface between biotechnology and information technology. Primary focus will be placed on the use of nucleic acid and protein databases to accurately and efficiently analyze genomic and proteomic data. Secondary focus will be placed on investigation of the modern techniques of molecular biology (DNA and RNA sequencing, microarrays, chromatin conformation analysis) used to produce genomic, transcriptomic, and epigenomic data.**

☐**Course Outcomes and Assessment Plan (current):**

Scientific Knowledge *	Students will apply, analyze, and evaluate information regarding the fundamentals of bioinformatics, including: sequence alignment, phylogenetic trees, gene annotation, structure modeling, and gene expression analysis.
Critical Thinking *	Students will analyze and interpret molecular data using both manual bioinformatics methods and computational tools.
Communication *	Students will interpret scientific articles of a popular nature, formulate an informed opinion, and communicate this opinion to others in a verbal or written fashion.

☐**Course Outcomes and Assessment Plan (proposed):**

☐**Course Outline including Time Allocation (current):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

The following course outline is included as a sample. As the composition of students in the course and their level of understanding of course material changes from semester to semester, the amount of time specifically spent on each topic in the outline may change from what is shown below.

Hour	Topic
1	The basics of the NCBI and UCSC bioinformatics portals
2	Chromosome structure and function
3	Using OMIM and MapViewer
4	Using OMIM and MapViewer
5	Using OMIM and MapViewer
6	Using OMIM and MapViewer
7	Databases
8	Databases
9	Databases
10	Amplifying DNA: Cell based cloning and PCR
11	Amplifying DNA: Cell based cloning and PCR
12	Amplifying DNA: Cell based cloning and PCR
13	Amplifying DNA: Cell based cloning and PCR
14	Amplifying DNA: Cell based cloning and PCR
15	Analyzing genes and genomes
16	Analyzing genes and genomes
17	Analyzing genes and genomes
18	Visualizing and investigating genomes using bioinformatics tools
19	Visualizing and investigating genomes using bioinformatics tools
20	Visualizing and investigating genomes using bioinformatics tools
21	Visualizing and investigating genomes using bioinformatics tools
22	Visualizing and investigating genomes using bioinformatics tools
23	Visualizing and investigating genomes using bioinformatics tools
24	**Midterm Exam**
25	Alignment and comparative genomics
26	Alignment and comparative genomics
27	Alignment and comparative genomics
28	Working with online alignment tools
29	Working with online alignment tools
30	Working with online alignment tools
31	Working with online alignment tools
32	Working with online alignment tools
33	Working with online alignment tools
34	Working with online alignment tools

35	Gene expression and functional genomics
36	Gene expression and functional genomics
37	Investigating gene expression using bioinformatics tools
38	Investigating gene expression using bioinformatics tools
39	Investigating gene expression using bioinformatics tools
40	Human genetic variation
41	Human genetic variation
42	Using dbSNP to investigate human genetic variation
43	Using dbSNP to investigate human genetic variation
44	Cancer genetics and bioinformatics
45	Cancer genetics and bioinformatics
	Final Exam

☐**Course Outline including Time Allocation (proposed):**

Express time allocation in one of the following formats for a 3 credit hour course; adjust accordingly: Weeks (15 weeks), Hours (45 hours, assuming 3 contact hours per week, Percentages (100 percent)

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 101

C. Course Title: Genetics:Human Aspects

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **The emphasis is fundamental genetic principles and concepts and how these apply to individuals within our culture and society as a whole. Topics include transmission of inherited traits, chromosomal abnormalities, gene structure and function, genes in populations and genetic implications of cancer, genetic engineering, evolution, eugenics and bioethics. Designed for non-science majors; not applicable towards biology program requirements.**

Q. Term Offered: **Fall, Spring** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 103

C. Course Title: Biological Concepts

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **This course is a broad overview of the field of biology, for non-biology majors. The various fields and levels of biology will be presented with an emphasis on the basic principles underlying all areas and all levels of biology. This course is suitable for students needing a general introduction to biology, for students in elementary education, or for students preparing to take the introductory majors biology courses BIOL 121 and BIOL 122.**

Q. Term Offered: **Fall, Spring** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 109

C. Course Title: Basic Human Anatomy/Physiology

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **An introductory course designed to provide students with a basic understanding of the structural organization and functions of the major systems of the human body. Laboratories provide opportunities to observe various anatomical parts and investigate physiological phenomena. For non-science students and is not applicable towards biology program requirements.**

Q. Term Offered: **Fall, Spring, Summer** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 111

C. Course Title: Environmental Biology

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **Fundamental principles of biology as they apply to people, their health, as individual organisms, as species, and as a part of a functioning ecosystem. Designed for non-science majors; not applicable towards biology program requirements.**

Q. Term Offered: **Fall, Spring** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 116

C. Course Title: Nature Study

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **Great Lakes flora and fauna are studied, with emphasis on ecological relationships and environmental impacts. Fisheries and wildlife management principles are also discussed. Open to recreation and outdoor activities directors, teachers needing updating in natural science, lifelong learning adults and others interested in the out-of-doors. Not applicable towards biology program requirements. Some hiking required.**

Q. Term Offered: **Fall, Spring, Summer** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 121

C. Course Title: General Biology 1

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q, S

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **The first semester of a year-long sequence in introductory biology designed for the science major and as a prerequisite for advanced biology courses. The topics include an introduction to scientific thinking, ecology, cell division, Mendelian genetics, evolution, and the diversity of the biological kingdoms (Bacteria, Protista, Fungi and Plantae), and plant structure and function. Laboratory exercises are designed to enhance the lecture material with hands-on experiences. Designed for students in science baccalaureate degree programs.**

Q. Term Offered: **Fall, Spring, Summer** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank. **CHEM 121 (may be taken concurrently)**

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 122

C. Course Title: General Biology 2

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **The second semester of a year-long sequence in introductory biology. The topics covered include molecular biology, cell biology (including bioenergetics and metabolism), molecular genetics, diversity of the Kingdom Animalia, and animal structure and function. Laboratory exercises are designed to enhance the lecture material with hands-on experiences. Designed for students in science baccalaureate programs.**

Q. Term Offered: **Fall, Spring, Summer** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 286

C. Course Title: General Microbiology

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **Introduction to the microbial world including microbial structure, function, metabolism, classification, genetics, control of microbial growth and immunity. The laboratory provides practical experience with fundamental concepts, techniques and instrumentation.**

Q. Term Offered: **Fall, Spring, Summer** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 300

C. Course Title: Pathophysiology

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, S

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **A study of general principles and causes of disease and resultant abnormal physiological functions of the organ systems. Included are discussions on cancer, aging, inflammation, stress, cardiovascular, nervous, respiratory, endocrine, excretory, digestive and musculoskeletal system dysfunction.**

Q. Term Offered: R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank. **BIOL 205 or BIOL 322 with a grade of C- or better and CHEM 214 or CHEM 321 with a grade of C- or better**

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 340

C. Course Title: Evolution

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **The study of the process of evolution, including the origin of species and fossil evidence in the geological record. Considers evidence of evolutionary relationships, including molecular homologies recently discovered by genome projects, the evolution of metabolic pathways, symbiotic relationships and the evolution of eukaryotes.**

Q. Term Offered: **Fall, Spring** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 348

C. Course Title: Animal Behavior

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **In this course, we explore the diversity of animal behavior in order to understand how behavior is organized and controlled, how it develops, why it is performed, and why it takes a particular form. Natural selection is a major theme with emphasis on viewing behavior as a species attribute, following the approach of comparative ethology, and as an individual attribute, interpreting behavior to be a "strategy" that contributes to an organism's fitness.**

Q. Term Offered: Fall R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 370

C. Course Title: Developmental Biology

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q, S

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **A study of the fundamental principles of development and the mechanisms responsible. An examination of the morphological changes which occur during development in vertebrates.**

Q. Term Offered: **Spring** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank. **BIOL 375 with a grade of C- or better**

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 373

C. Course Title: Cell Biology

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q, S

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **A study of ultra structure and function of cellular components, including major classes of biologically important molecules, energy transformation, membranes, signaling, the role of cytoskeleton, the cell cycle and apoptosis.**

Q. Term Offered: **Fall, Spring** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank. **BIOL 122 with a grade of C- or better and CHEM 214 or CHEM 322 with a grade of C- or better**

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 421

C. Course Title: Endocrinology

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **An in-depth investigation of vertebrate (particularly human) endocrinology. Topics will include hormone structure, hormone synthesis, the mechanisms of hormone action, endocrine disruptors, and the roles of hormones in calcium metabolism, digestive physiology, reproduction, growth, and the stress and sympathetic responses. The hormones of the major endocrine glands will be investigated. There will also be an introduction to various techniques used in endocrinological research. This course includes the reading and understanding of primary scientific literature.**

Q. Term Offered: **Fall of even years** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

MODIFY A COURSE – Course Data Entry Form

FORM F-M

Effective Fall 2015

I. ACTION TO BE TAKEN: MODIFY A COURSE

Desired Term Effective (6 digit code): 201608 Examples: 201601 (Spring), 201605 (Summer) NOTE: The first four digits indicate year, the next two digits indicate month in which term.

II. COURSE TO BE MODIFIED:

A. Course Prefix: BIOL B. Number: 475

C. Course Title: Bioinformatics

LIST THE LETTER(S) OF ALL CHANGES FROM SECTION III BELOW: P, Q

See Appendix E Instructions for Completing Forms.

III. MODIFICATIONS

A. Course Prefix: B. Number:

B. Contact Hours: Lecture ☐ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Course Title: [Limit to 30 characters including punctuation and spaces]

E. College Code: G. Department Code: H. Credit Hours: Variable ☐ Fixed ☐

I. Minimum Credit Hours: J. Maximum Credit Hours: [Enter number is space.]

K. Hours May be Repeated for Extra Credit: Yes ☐ No ☐ If yes, max times Or max credits awarded.

L. Levels: Undergraduate ☐ Graduate ☐ Professional ☐

M. Grade Method: Normal Grading ☐ Credit/No Credit (Pass/Fail) ☐

N. Does proposed new course replace an equivalent course? Yes ☐ No ☐

O. Equivalent Course: Prefix: Number:

P. Catalog Description: Limit to 125 words – PLEASE BE CONCISE. **A study of the interface between biotechnology and information technology. Primary focus will be placed on the use of nucleic acid and protein databases to accurately and efficiently analyze genomic and proteomic data. Secondary focus will be placed on investigation of the modern techniques of molecular biology (DNA and RNA sequencing, microarrays, chromatin conformation analysis) used to produce genomic, transcriptomic, and epigenomic data.**

Q. Term Offered: **Spring of odd years** R. Max Section Enrollment: Lecture: Lab:

S. Prerequisites or Restrictions: If none, leave blank.

T. Co-requisites: Courses must be taken concurrently. If none, leave blank. Limit to 100 characters including punctuation and spaces.

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

DELETE A COURSE – Course Data Entry Form

FORM F-D

Effective Fall 2015

I. ACTION TO BE TAKEN: DELETE COURSE FROM CATALOG

The course listed below will be removed from the Ferris State University Catalog. (See Appendix E Instruction for Completing Forms)

A. Desired Term Effective: Term: **Fall** Year: **2016**

II. CURRENT COURSE TO BE DELETED FROM CATALOG:

A. Course Prefix: **BIOL** B. Course Number: **113**

B. Contact Hours: **Lecture = 2 Lab = 3** Lecture ☒ Lab ☒ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Full Course Title: **Basic Botany**

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

DELETE A COURSE – Course Data Entry Form

FORM F-D

Effective Fall 2015

I. ACTION TO BE TAKEN: DELETE COURSE FROM CATALOG

The course listed below will be removed from the Ferris State University Catalog. (See Appendix E Instruction for Completing Forms)

A. Desired Term Effective: Term: **Fall** Year: **2016**

II. CURRENT COURSE TO BE DELETED FROM CATALOG:

A. Course Prefix: **BIOL** B. Course Number: **206**

B. Contact Hours: **Lecture = 3 Lab = 0** Lecture ☒ Lab ☐ Seminar ☐ [Enter contact hours per week in blank. See formula for contact hours to credit hours in Appendix E.]

C. Practicum ☐ Independent Study ☐ [Check Box as appropriate. See Definitions in Appendix E]

D. Full Course Title: **Advanced Human Physiology**

To be completed by Academic Affairs Office: **Standards & Measures Coding and General Education Code**

Basic Skill (BS) ☐ General Education ☐ Occupational Education ☐ G E Codes:

UCC Chair Signature/Date

Academic Affairs Approval Signature/Date

OFFICE OF THE REGISTRAR USE ONLY

Date Rec'd: Date Completed: Entered: SCACRSE ☐ SCADETL ☐ SCARRES ☐ SCAPREQ ☐

Yvonne M Olson

From: John Scott S Gray
Sent: Tuesday, February 16, 2016 10:20 AM
To: Yvonne M Olson
Cc: Christopher M Westerkamp
Subject: Fwd: Message from "RNP372053"
Attachments: 20160215134225153.pdf; ATT00001.htm

Yvonne,
Chris mistakenly sent this proposal to me directly - please log it into the system and forward it to the committee. Thanks for your help!
Be happy,
JSG
John Scott Gray

Sent from my iPad

Begin forwarded message:

> **From:** Chris Westerkamp <westerc@ferris.edu>
> **Date:** February 15, 2016 at 1:27:47 PM EST
> **To:** JohnScottGray@ferris.edu
> **Subject: Fwd: Message from "RNP372053"**
>
> Attached curriculum proposal from biology.
> Enjoy!
>
> Christopher M. Westerkamp
> Professor, Biological Sciences
> Ferris State University
> westerc@ferris.edu
> (231) 591-5037
>
> ---------- Forwarded message ----------
> From: <scanbiology>
> Date: Mon, Feb 15, 2016 at 1:42 PM
> Subject: Message from "RNP372053"
> To: Christopher M Westerkamp <ChristopherWesterkamp@ferris.edu>
>
> This E-mail was sent from "RNP372053" (MP 7001/LD370).
>
> Scan Date: 02.15.2016 13:42:25 (-0500)
> Queries to: scanbiology

Yvonne M Olson

From: John Scott S Gray
Sent: Tuesday, March 15, 2016 2:18 PM
To: Bradley Isler
Cc: Joseph Lipar; Yvonne M Olson; Gayle E Driggers; Christopher M Westerkamp
Subject: Biology and Biotech Curriculum Proposal

Bradley,
I wanted to let you know that the college curriculum committee approved your proposal. There were a couple of minor issues that need to be considered/addressed. First, on your course outlines and time allocations you are very rigid, and we advise you to include some language before these parts of the Forms that signifies that these are sample outlines and allocations so that you have flexibility to make minor shifts in the course moving forward. In some cases, it appears that these things are being changed (BIOL 373 has the item marked) but the changes are not being made, so this needs to be looked at. The outcomes and the assessment are whatever you want them to be, so while the form must be filled out correctly (with the box marked when changes are made and not marked when they are not) you are welcome to leave these items as you think is best. More importantly, the Form B's and C's need to have the date when these consults were sent included on each form. Once these two things are addressed, please send the revised document to Yvonne. At that time, Joe will need to print his name next to his signature on the Form A.
Regards,
JSG
John Scott Gray

Yvonne M Olson

From: Yvonne M Olson
Sent: Tuesday, March 22, 2016 12:18 PM
To: John Scott S Gray (JohnScottGray@ferris.edu)
Subject: FW: Message from "RNP372053"
Attachments: 20160321151133678.pdf

Hi John,
I'm forwarding this to you for review. If there is anything specific you would like for me to do with it, please let me know. Gayle is "Cruisin'" this week so I'm flying solo.

Thanks

Yvonne

From: cmwesterkamp@gmail.com [mailto:cmwesterkamp@gmail.com] **On Behalf Of** Chris Westerkamp
Sent: Monday, March 21, 2016 2:50 PM
To: Yvonne M Olson <YvonneOlson@ferris.edu>
Subject: Fwd: Message from "RNP372053"

Yvonne,
Here is the revised proposal that was approved by the curriculum committee last month.

Christopher M. Westerkamp
Professor, Biological Sciences
Ferris State University
westerc@ferris.edu
(231) 591-5037