Minutes of the Graduate Faculty Council Meeting

Tuesday, October 1, 2013

**Members** (15): Keat Ghee Ong (Biomed), Craig Friedrich (MEEM), Zhenlin Wang (CompSci), Simon Carn (Geo), Kari Henquinet (PCorps), Shane Mueller (CogSci), John Durocher (BioSci), Ashutosh Tiwari (Chem), Yu Cai (SOT), Audrey Mayer (SocSci), Veronica Griffis (Civil), Jiguang Sun (Math), Noel Urban (Non-Dept.Env), Tom Merz (Bus), Julie King (ChemEng)

**Guests** (8): Jacqueline Huntoon (Grad Sch), Debra Charlesworth (Grad Sch), Nancy Byers-Sprague (Grad Sch), Amberlee Haselhuhn (GSG), Joel Tuoriniemi (Bus), Jason Carter (Kines), Sarah Lucchesi (Lib), Jacque Smith (Grad Sch)

1) Meeting called to order at 4:05 pm.

2) Review and approval of 09/10/13 meeting minutes.

3) Committee Reports:
   a. Research Only Mode (N. Urban): No report as the committee has not met yet.

4) Old Business:
   a. Naming of Master Degrees (Dean Huntoon): The purpose of this document is to clear up the terminology used to refer to our master's programs (Plan A, B, C, D) and refer to them as thesis, report, or coursework only. Members were asked to bring this back to their departments and to be prepared to vote at this meeting. There were no questions or comments.
      - (D): Motion to approve the proposal passed. Dean Huntoon will forward this to the Senate for review.
   b. SOT: Dual Degree Program (Y. Cai): Members were asked to bring this proposal back to their departments and to be prepared to vote at this meeting. Question/comments:
      - (C): In the last meeting it was suggested that Social Sciences may have some appropriate courses to add to the proposal. However, after further discussion the department will not be able to contribute at this time. Maybe in the future this can be approached.
      - (C): Dean Huntoon asks that Y. Cai bring the comment above to E. Levin and J. Frendewey as they have also received comments from the Curricular Policy Committee.
      - (C): The Senate policy for dual degrees is that the Curricular Policy Committee needs to approve them.
      - (D): Dean Huntoon will forward this to the Curricular Policy Committee for review.
   c. Publishing Agreement – Additional Approval Signature (D. Charlesworth): D. Charlesworth was contacted by a faculty member regarding the required signatures on the publishing agreement (the agreement that the student submits at the end of the thesis, report, or dissertation stage). Currently the advisor or the graduate program director signs off on the form. They are approving whether or not the document is released globally or strictly to a Michigan Tech audience and whether or not the document has am embargo. An issue arose where the faculty advisor of the student was not the principal investigator (PI) on the grant that the student was working on and there was no communication in terms of what the PI's requirements were. The faculty member asked that D. Charlesworth bring to GFC a question as to whether a signature line for a PI can be added to the form.
      - (C): This issue could be avoided by requiring restrictions to be specified at the time a student begins a supported project so that it is clear to him/her, the advisor, and the PI what the expectation is.
• (C): You would think that everybody involved would know what the restrictions are. You would hope the faculty and student would be working together on whatever issues may arise.
• (C): If you are the PI on a sponsored project, according to the University, the PI has the ultimate right and responsibility to make decisions to that project. It the PI’s responsibility to inform the appropriate people of rules, restrictions, etc.
• (D): Dean Huntoon will communicate with the Deans/Chairs that if students are being paid by sponsored projects and there is a need for embargo then it is the PI’s responsibility to inform those students at the time they are brought on the project. Possibly there should be a place where the student signs to acknowledge this as well.

5) New Business:
   a. Master of Science Degree Program in Kinesiology (J. Carter): For the past few years Kinesiology has been working towards the development of a master’s degree. Currently their graduate students are housed either in Biological Sciences, Human Factors, or Biomedical Engineering. Rationale: Kinesiology now has the faculty to support a master’s program, there is a need to consolidate their current graduate students and faculty, Kinesiology is one of the fastest growing majors in the country, and there are students who are interested in course-based master’s degrees. This will also provide a stepping stone for a PhD program. Note that there are some required courses that are within other departments, specifically Biomedical Engineering, Biological Sciences, Math, and Psychology. J. Carter has spoken to the chairs of these departments and they have expressed an openness in allowing the students to take these courses.
   • (Q): Who will teach the newly proposed courses?
   • (A): The existing faculty and the three new hires (faculty search currently in progress).
   • (Q): What is the career track of students who receive this degree?
   • (A): Plan A students are likely to go on for a PhD (most logical career is in academia). Plan D students will be in the fitness industry or college athletics.
   • (C): When the Graduate School is recruiting graduate students, they do get asked about Kinesiology.
   • TO DO: Please take the proposal (handouts section of the GFC website) back to your departments and bring feedback to the next GFC meeting. Please be prepared to vote.
   b. Master’s Program in Accountancy Proposal (J. Tuoriniemi/T. Merz): This is a proposal for a 30 credit hour, Plan D coursework program, designed to attract students with and without undergraduate degrees in accounting who wish to earn a graduate degree. Should this proposal be approved, the SBE would also plan to offer an accelerated master’s program (BS/MSA). Rationale: 1) meet the goal of the University’s strategic plan, 2) in order to obtain a CPA license, a student must have earned at least 150 credit hours. Students realize greater market utility by completing a master’s program rather than taking additional undergraduate level courses, 3) there are interested students. The existing MBA program is geared toward innovation and technology which is not an appropriate fit for accounting students to continue on to.
   • TO DO: Please take the proposal (handouts section of the GFC website) back to your departments and bring feedback to the next GFC meeting. Please be prepared to vote.
   c. GFC Liaison to the University Senate (Dean Huntoon): The Senate policy allows for a liaison to the Graduate Faculty Council. Typically, this is assigned to somebody who is both a member of GFC and the Senate. Is anybody on Senate this year? No. Dean Huntoon will send Brian Barkdoll who is the Senate President the minutes from GFC. If need be he can task somebody from Senate to sit in on the GFC meetings.
   d. Announcement: Independent Study Credits and Unacceptable Practices (Dean Huntoon): According to United States Immigration policy, international students who are here on student visas have to be enrolled fulltime and of those fulltime credits only three credits can be online. Allegedly students who were unable to enroll in face to face course sections due to capacity
limits were told to enroll in the online section which puts the University in violation of the immigration policy. International students should be given priority for enrollment in the face to face course sections and/or offer proctored sections. Another situation is resulting from students either wanting or needing to take more than the allowable number of 3000 or 4000 level credits. There is at least one department out there who reportedly is telling students to register for a 5000 level independent study course but then they do the 3000 or 4000 level course work. This is fraudulent. Faculty members were informed of the international student/online course issue but not of the 5000 level course enrollment issue. Dean Huntoon will email the deans and ask that they pass the message on to their faculty.

e. Accelerated Master’s Program – BS/MS dual enrollment, unanticipated challenge (Dean Huntoon): Currently students earn their undergraduate degree and sometime before they graduate they apply to the accelerated master’s program. After they are awarded their undergraduate degree they then are coded as graduate students and they need to complete at least 150 credits in order to receive the master’s degree and bachelor’s degree. Double counting and senior rule is allowed. Call for an Ad Hoc committee to address the following issue: a student in Electrical Engineering neglected to take a general education course until after they had exhausted all of their undergraduate course allowances and senior rule allowance. They were needing to take six credits of graduate courses but they had already taken their double counting allowance plus needed this one general education course. Could we do something where undergraduate students could be dual enrolled for both the BS and MS after they reach a certain point so that they could mix and match the BS level courses and MS level courses? At the time they complete their degree they would have to demonstrate completion of the BS degree and demonstrate completion of the MS degree.

- (Q): Isn’t the graduate program committee required to look at the courses and advise the students on which courses are needed to graduate? And if so, this would be their responsibility.
- (A): Yes.
- (Q): How will dual enrollment work with financial aid and paying undergraduate rate versus graduate credit rate?
- (A): This is something that the committee would need to address. Another issue that would need to be addressed is when the student can begin taking research credits.
- (D): The Graduate School will keep an eye on this and possibly revisit in the future.

f. Information Item: GFC Agenda Items will be brought forth from the department interested in the topic (Dean Huntoon): The University community brings issues to the Graduate School in order for them to be addressed at GFC meetings. GFC members assume that the Graduate School supports the item which is not always the case. From now on issues will be brought forth from the department representative of the interested party.

g. Announcement (J. Smith): There will be a GRE representative, Teresa Axe, on campus October 17 and 18. There will be a GRE presentation for students on Thursday, October 17 starting at 5:30 in Admin 404 (pizza and soda will be served). Please encourage students to attend. There will be a presentation for faculty and staff on Friday, October 18 from 7:30 am – 8:30 am in Ballroom B1 (breakfast will be served). ETS is offering a paper-based GRE revised General Test on campus February 8, 2014.

6) Motion to adjourn at 5:01 pm.
October 1, 2013
(Last update: 10/10/13)

Handouts of the Graduate Faculty Council
Update on the Naming of Master’s Degrees

In the past, all master’s degrees offered by Michigan Tech belonged to one of the following groups of program types:

- Plan A: Thesis
- Plan B: Report
- Plan C: Coursework and exam
- Plan D: Coursework only

In the future, these four groups will continue to be used internally at Michigan Tech (for example, in proposals for new degrees), but Plan C and Plan D will be grouped into one category (Coursework only) for marketing and communication purposes. Additionally, the names of all of the groups will be shortened to include the descriptive terms only. This means that:

- “Plan A: Thesis” will be referred to as “Thesis”
- “Plan B: Report” will be referred to as “Report”
- “Plan C: Coursework and exam” and “Plan D: Coursework only” will be referred to as “Coursework only” for marketing and communication.

The distinction between the two types of Coursework only degrees (coursework and exam, coursework only [no exam]) will continue to be made internally (e.g., in proposals for new programs or in changes proposed to existing programs as part of the annual curriculum update [or binder] process).

Coursework only programs typically prepare students for a professional career that will not involve significant research. They are not the same as Professional Science Master’s (or PSMs); therefore, the term “Coursework only” is the preferred way to refer to them (rather than “Professional master’s”).

As was the case in the past, the following requirements continue to exist:

- Programs can offer only one type of coursework only degree (either with an examination or without an examination).
- The examination associated with a coursework only with exam program can be oral or written or both at the discretion of the program.
- Minimum GPA rules for students in coursework only degree programs are the same as those for other graduate students at Michigan Tech.
- None of the credits counted toward a coursework only degree can be identified as “research” in the Michigan Tech course catalog.
- Master’s programs that require a thesis or a report are both considered to be research-based master’s programs in contrast to the coursework only programs.

Programs that wish to add or remove a degree option must obtain approval from the dean of the appropriate academic college(s) or school(s) and from the dean of the Graduate School. This can normally be done in association with the annual curriculum update (or binder) process.
AGREEMENT FOR A DUAL DEGREE MASTER PROGRAM IN GEODESY AND REMOTE SENSING OR CADASTRE AT THE SIBERIAN STATE ACADEMY OF GEODESY AND IN INTEGRATED GEOSPATIAL TECHNOLOGY AT MICHIGAN TECHNOLOGICAL UNIVERSITY

BETWEEN
SIBERIAN STATE ACADEMY OF GEODESY
Novosibirsk, Russian Federation

AND
MICHIGAN TECHNOLOGICAL UNIVERSITY
Houghton, Michigan, U.S.A.

The Siberian State Academy of Geodesy (SSGA) and Michigan Technological University (Michigan Tech) share a commitment to international cooperation among universities and mutual commitment to promote academic exchanges. This Agreement is intended to promote progress toward shared goals.

1. **Purpose and Objectives**

The objective of this Agreement is to set forth definitions and regulations related to the implementation of a Dual Degree Master Program (hereinafter referred as “dual degree” or “dual program”) in Geodesy and Remote Sensing or Cadastre from SSGA and in Integrated Geospatial Technology from Michigan Tech.

In implementing the dual degree program the parties seek

- to educate graduate students from the Russian Federation and the United States of America in geospatial sciences and technology;
- to contribute to sustainable geospatial management in the Russian Federation, North America and globally;
- to enhance the global competitiveness of geospatial technology experts;
• to prepare graduates who have a thorough understanding of current and future
global challenges in advanced geospatial technologies and management and
possess the knowledge and skills adequate to address them;
• to enhance teaching practices and the quality of higher education in geospatial
sciences in Russia and the United States.

2. Main Actions

1. Mobility of students.
2. Offering of Master’s courses, tailored to international students in content and
comparative perspective.
3. Annual seminars that, among other things, will address innovative approaches to
pedagogy. The pedagogical issues will be addressed with reference to the latest
developments of the Bologna process, emphasizing graduates’ employability and
learning outcomes.
4. Exchange of faculty for visits (up to 8 weeks) to take part in courses at a host
university as teachers and evaluators.
5. Joint supervision of Master’s theses by professors from the partner university.

3. Definitions

Within the framework of this exchange, the following definitions apply:
• “Home university” shall mean the university in which a student first enrolled as a
degree candidate or at which a participating faculty has his or her primary
affiliation
• “Host university” shall mean the university that has agreed to receive students of
faculty from the home university for a period of time.
• “Dual degree” shall mean the conferring of two degrees and issuance of two
Master of Science diplomas, one of which will be issued by each party to this
Agreement.
• “ECTS” is the European Credit Transfer System and is a standard for comparing the
study attainment and performance of students of higher education. The duration
of the program will be two academic years with a full workload corresponding to
120 ECTS.
• For the purposes of this Agreement, and for students pursuing graduate degrees, 1 US credit is assumed to be equal to 3.3 ECTS.
• “Full-time enrollment at Michigan Tech” is assumed to be 9 credits per academic year semester (fall or spring) and 1 credit during the summer session.
• “Full-time enrollment at SSGA” is assumed to be 30 ECTS credits per academic year semester (fall or spring).
• Program Liaison Officers are appointed by the administrations of the parties to be responsible for all the needed academic procedures between the two universities.

4. **Mobility Eligibility**
Eligible Russian students and faculty must be citizens of the Russian Federation or third country nationals who have been legal residents in the Russian Federation for at least three years before the start of outgoing mobility. Eligible US students and faculty must be US citizens or permanent residents.

5. **Dual Degree Criteria**

5.1. **Participation Criteria**
To obtain a dual degree, the participating students must meet the following academic criteria:

• An dual degree student whose home university is SSGA and who is admitted to Michigan Tech during his/her graduate program must have attended SSGA as a graduate student for at least one semester and acquired at least 30 graduate ECTS prior to enrolling at the host university (Michigan Tech). During the course of the dual degree program, students must earn at least 15 US graduate credit hours at Michigan Tech.

• A dual degree student whose home university is Michigan Tech and who is admitted to SSGA must have earned at least 15 US credit hours in at least two semesters while enrolled as a graduate student at Michigan Tech prior to enrolling in the host university (SSGA). The student must also attend SSGA for at least one semester and acquire at least 50 graduate ECTS.
The Dual Degree is expected to be completed in two years. Any extension to this must be agreed upon by Program Liaison Officers.

5.2. Credit Transfer
A mechanism of conversion of the US credits into the ECTS credits and ECTS credits into US credits will be implemented and approved by the parties of this Agreement. It is agreed that 1 US credit hour equals 3.3 ECTS for graduate students involved in the dual degree program. This equivalence is based on the assumption that full-time enrollment at each university requires a similar amount of effort. Full-time enrollment per academic year semester at SSGA is 30 ECTS and is 9 credits per academic year semester at Michigan Tech. This equivalence results in the Agreement that 1 US credit hour equals 3.3 ECTS. Students participating in the program will be advised by the Program Liaison Officer at their home university who will collaborate with the Program Liaison Officer at the host university to pre-approve courses and credits for students involved in this program. It is the responsibility of the Program Liaison Officers to be aware of all rules and regulations regarding the awarding of graduate degrees at the home and host universities and to advise students accordingly. The parties reserve the right to make the final decision regarding students’ ability to apply courses and credits toward a graduate degree in compliance with their standard polices and guidelines.

5.3. Master Thesis and Degree Requirements
The master’s thesis is a strict prerequisite for being awarded a Master of Science degree from each party of this Agreement. Thus, for a dual degree, students must comply with the thesis requirements of both awarding universities. Joint supervision of the thesis work by Russian-US faculty advisors is required. The thesis will be defended on-site at either the home or host university and members of the students’ committee will attend in person or via video-conferencing. Whenever possible, students will be strongly encouraged to adopt a comparative Russian-US perspective in their theses.

Michigan Tech policies require that at least six and no more than ten of the credits applied toward a master’s degree can be earned through research credits, at least 12 of the credits applied toward a master’s degree must be at the graduate (5000-6000) level,
and no more than 12 of the credits applied toward a master’s degree can be at the junior or senior undergraduate level (3000-4000). A minimum of 30 credits (or equivalent) must be completed in order to earn a master’s degree at Michigan Tech. For the purposes of this dual degree Agreement, the master’s thesis is assumed to be a shared body of work (co-advised by faculty at both the home and host universities and defended in front of faculty from both the home and host universities) that can be used to satisfy degree requirements at each institution.

SSGA policies require that 30 ECTS applied toward a master’s degree can be earned through research credits, at least 27 ECTS of the credits applied toward a master’s degree must be from the list of state standard courses (graduate level), and 63 ECTS of the credits applied toward a master’s degree should be taken as elective courses in a students’ specialization. A minimum of 120 ECTS (or equivalent) must be completed in order to earn a master’s degree at SSGA. For the purposes of this dual degree Agreement, the master’s thesis is assumed to be a shared body of work (co-advised by faculty at both the home and host universities and defended in front of faculty from both the home and host universities) that can be used to satisfy degree requirements at each institution.

5.4. Graduation and Diploma
The students participating in this program must satisfy the degree requirements of both home and host universities in order to graduate with the dual degree. At the completion of the dual degree program as set forth in this Agreement, both universities will confer the degrees and issue diplomas for students. SSGA offers a Master Science degree in Geodesy and Remote Sensing; Cadastre. Michigan Tech offers Master Science degree in Integrated Geospatial Technology.

The diplomas issued by the host university shall be enclosed and posted to the Program Liaison Officers.

5.5. Graduation with Extenuating Circumstances
In the event that a dual degree participant encounters extenuating circumstances which make it impossible for them to complete the requirements of the dual degree, it is the home university’s discretion to allow their respective student to complete the requirements of a non-dual degree, conferring its own degree and awarding of its own diploma.

6. **Student Mobility**

Students from SSGA, completing their dual degree at Michigan Tech, will be received as degree seeking students at Michigan Tech. Students from Michigan Tech, completing their dual degree at SSGA, will be received as degree seeking students at SSGA.

6.1. **Courses at the Host University**

The purpose of student mobility will be to enable students to take classes and to pursue a dual degree from both the home and host universities. Courses preapproved by the Program Liaison Officers and passed at the host university will be accepted for credit towards the degree at the student’s home university. Courses preapproved by the Program Liaison Officers and passed at the home university will similarly be accepted for credit towards the degree at the student’s host university. It will be the responsibility of each student participant in the dual degree program to obtain pre-approval from his/her home and host Program Liaison Officers for courses taken at the host university to assure proper credit transfer recognition. It will be the responsibility of each Program Liaison Officer to ensure that a students’ degree program will satisfy the requirements for a master’s degree at both the home and host universities.

6.2. **Eligibility and Admission**

Each home university will pre-screen and nominate qualified students for the dual degree program and forward relevant data concerning those students to the host university. Such nomination shall be accompanied by appropriate application materials, including, at a minimum the candidate’s official academic transcripts. Letters of recommendation and test scores (e.g., GRE and TOEFL) may be required as well. Each university shall respect the admission requirements and enrollment constraints of the host university. Program participants will be subject to the standard rules and
regulations, and enrollment constraints of the host university for the purposes of enrolling in courses. The host university shall have final authority on admission decisions to the dual degree program. Students participating in the dual degree program must be admitted to both the home and the host university before enrolling in any courses at the host university. It is expected that the host university will accept qualified nominations except in extraordinary circumstances while maintaining a balance of outgoing and incoming students at each university.

6.3. Language
The language of instruction for the dual degree at SSGA and Michigan Tech is English. Language courses or assistance will be offered for students at each campus as is possible given each university’s resources. Michigan Tech students participating in the dual degree program are encouraged to pursue some pre-mobility expertise in Russian in order to fully realize the potential of their time abroad.

6.4. Academic Year
“Academic Year” in the context of this Agreement is defined as an autumn (or fall) and spring semester/term and may include the summer session that follows the spring term. At SSGA the autumn term begins in September and the spring term in January. At Michigan Tech autumn term begins in August/September, the spring term in January, and the summer session in May.

6.5. Full-time Enrollment Status
Each year during the term of this Agreement, the parties will exchange students enrolled full time. The measure of exchange will be that one student-term/semester at SSGA equals one student-term/semester at Michigan Tech.

Full time for SSGA is defined thus: graduate students = 30 ECTS each term. Students may take research credits during summer (up to 20 ECTS), or enroll in online courses.

Full time for Michigan Tech is defined thus: graduate students = 9 academic credits during fall and spring semesters. Students may take research or project credits during summer semester (up to 6 US credits), or enroll in online courses.
6.6. Balance
A maximum of four students each way will be exchanged per academic year. The maximum number of students for exchange may be amended by mutual Agreement. Every effort will be made to maintain an evenly balanced exchange from year to year. It is recognized, however, that circumstances may preclude an even exchange of students in a particular year. In the event that balance is not maintained over a period of three years, exchanges from one party may be limited or eliminated until balance is achieved.

6.7. Academic Advising
Departments/divisions participating in the dual degree program at the home university will provide academic counseling to ensure that the academic courses taken at the host university are acceptable to the home university. The Program Liaison Officer at the home university will collaborate with the Program Liaison Officer at the host university to ensure that courses taken at the home university will be acceptable to the host university. The host university will provide and regularly update course descriptions and syllabi (see appendixes A, B) to aid in course equivalency evaluation.

6.8. Academic Performance
Participants in the dual degree program will be governed by the same regulations and performance standards that pertain to other students at the host university. In addition, the host university reserves the right to require the withdrawal of any program participant whose academic standing of conduct warrants such action. The host university will consult with the home university before finalizing such action. The host university will notify the home university of the student’s last date of attendance.

If a participating student voluntarily withdraws or is dismissed for disciplinary reasons before the end of the term, that student’s participation will be considered completed by the home and host universities as it pertains to maintaining the balance of exchanges between the universities.

6.9. Access to Academic and Social Facilities
Students shall be entitled or required to participate in any introductory or orientation courses or programs that may customarily be arranged for or required of students at the host university respectively. Students shall have the same rights of access to academic and social facilities provided by the host university as do host university students. Students participating in the dual degree program shall be subject to the rules, regulations, and discipline of the host university in which they are enrolled.

6.10. Transcripts
Due to privacy laws, students must request that the host university release a copy of their transcript to the home university at the conclusion of each semester, generally within one, but no case later than three weeks after the last day of the semester. This request will be done in accordance with standard university policies and procedures. Students must also request that their home university share transcripts with the host university in order to allow for awarding of the dual degree.

6.11. Financial Aid
Financial aid will be processed (awarded, dispersed, reported, and records kept) and satisfactory academic progress will be monitored by the home university. To facilitate the awarding of financial aid, the designated office at the host university will convey to the home university details about cost of education at the host university, including tuition, fees, room and board, books, etc., as well as the applicable refund and repayment policies of the host university. In addition, when requested by the home university, the designated office at the host university will provide confirmation of enrolment status to verify eligibility for financial aid. If refund and/or repayment involving financial aid funds become necessary, the home university will calculate the refund and repayment amounts.

6.12. Visa Support Services
The host university will assist participating students, to the fullest extent possible, in obtaining visa and other documents required by the government of the host country. In order to comply with US government regulations, participants who are not US citizens will be required to provide a guarantee that they have the financial resources to meet all
expenses. Upon submission of a satisfactory completed financial form, Michigan Tech’s designated office will provide the student with an I20 form to apply for an F-1 Student Visa. The SSGA designated office will provide adequate acceptance and invitation letters and necessary information on how to apply for a Visa from the appropriate authorities to dual degree students from Michigan Tech.

7. **Student Responsibilities and Expenses**

7.1. **Registration and Payment of Tuition**
Participating students will enroll at the host university and be registered at their home university for each semester of exchange. SSGA and Michigan Tech will require participating students to pay tuition and any required fees to their home university, if applicable. Both universities are willing to seek funding to assist in covering students’ educational costs. Participants will be exempted from paying tuition to the host university as long as balance is maintained in terms of the number of incoming and outgoing students at each university.

7.2. **Payment of other Educational and Living Expenses**
Neither SSGA nor Michigan Tech will be responsible for the costs of books, fees, equipment, room, board, travel, transportation or other personal expenses. Host university fees for which the student is responsible, if any, vary by university. The host university will inform students, at the time of their acceptance, about approximate costs they will be responsible for at the host university.

7.3. **Housing**
Each university will assist participating students in securing housing for the period of time that they will be on the host campus; however, the cost of room and board will be paid by the student.

7.4. **Health Insurance and Medical Expenses**
Student participants will be personally responsible for purchasing the host university’s and/or the host country’s required health/medical insurance for the time period of their
exchange. The host university will assist incoming student participants in identifying available health insurance options.

Each participant student shall provide emergency contact information. In the event that a participant is involved in a serious accident or other circumstance of grave nature, or is subject to disciplinary action, the host university will immediately notify the home university. If necessary, the immediate notification of serious incidents or actions may be limited to a statement of a problem and a brief outline of intended plans of action. Detailed information should be forwarded to the home university in a timely manner.

8. **General Provisions**

8.1. **Program Liaison Officer**
The academic units of the parties creating this Agreement shall each identify a Program Liaison Officer who shall be responsible for all matters relevant to the specific program Agreement.

8.2. **Legal Indemnities and Policies**

8.2.1. Ownership of inventions, discoveries, and works of authorship which are discovered, conceived, and/or created directly pursuant to any activity under this Agreement (Intellectual Property) shall be with the university(s) where such intellectual property was discovered, conceived, and/or created. Both universities agree to acknowledge any participation of the other in any publications resulting from activities under this Agreement and, subject to any conflicting rights of third parties, agree that both parties may use the results obtained from the activities conducted under this Agreement for internal education and research purposes.

8.2.2. No monetary consideration will be exchanged between the two universities, nor will there be any indemnities, reimbursements for expenses, or sharing of fees or profits arising from a dual degree program.

8.2.3. The relationship of SSGA and Michigan Tech under this Agreement shall be of independent contractors, and a party should be not deemed, nor hold itself out as being, a partner or agent of the other party. Neither SSGA nor Michigan Tech shall be liable for
acts of the other, nor shall they be liable for the acts of students participating in the dual degree program.

8.2.4. Both universities subscribe to a policy of equal opportunity and will not discriminate against a participating student on the basis of race, gender, age, marital status, ethnicity, religion, national origin, sexual orientation, handicap, or any other basis prohibited by the laws of that university’s home country.

8.2.5. The obligations of the two universities under this Agreement are limited to student participants and faculty members only and do not extend to spouses, partners and dependents.

8.2.6. Specific details not included in this program Agreement will be developed jointly and spelled out in a separate addendum to the present Agreement and approved by the appropriate university officials.

8.3. Limitations of Resources Committed
The agreement does not create an obligation to either party to provide resources necessary to carry out any part of the Agreement except as approved by the party responsible for providing these resources.

8.4. Additional Implementing Agreements
The parties may explore the possibility of the creation of additional joint programs or other collaborations between various units of the two universities. Such additions will be covered by developing a new Agreement between parties.

8.5. Contacts for the Agreement (Program Liaison Officers)

For SSGA
Name: Igor Musikhin
Address: Siberian State Academy of Geodesy, 10, Plakhotnogo Str., Novosibirsk, 630108, Russia
Phone: +7 913 790 09 18
Fax: +7 (383) 343 25 39
e-mail: igor_musihin@mail.ru

For Michigan Tech
Name: Eugene Levin
Address: Michigan Technological University, 1400 Townsend Drive, Houghton, Michigan 49431, U.S.A.
Phone: (906) 487 24 46
Fax: (906) 487 25 83
e-mail: elevin@mtu.edu
8.6. Review, Contacts, Signatories

The Agreement is subject to review at the end of the fifth year and shall be effective upon full execution and end on December 31, 2018. It shall be subject to revision, modification or renewal by mutual written agreement. Either party may terminate the Agreement by a written notice submitted at least 90 days in advance of the next academic semester. Termination would not affect students already engaged in the Agreement. If the Agreement is not renewed by mutual consent or earlier terminated, the Agreement will conclude at the end of the specified time period, or after activities in progress have concluded.

In witness thereof, the parties have caused this Agreement to be duly executed.

Signing for Siberian State Academy of Geodesy

_______________________________
Aleksandr Karpik
Rector

_______________________________
Date

Signing for Michigan Technological University

_______________________________
Glen Mroz
President

_______________________________
Date

_______________________________
Max Seel
Provost and Vice-President for Academic Affairs

_______________________________
Date
<table>
<thead>
<tr>
<th>No.</th>
<th>Course code</th>
<th>Course</th>
<th>Course description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SU5010</td>
<td>Geospatial Concepts, Technologies and Data</td>
<td>High-level review of geospatial data acquisition systems, sensors and associated processing technologies. Course considers geospatial metadata generation principles, interoperability, and major tools for manipulation with geospatial data. Course may help in transition of non-geospatial majors to geospatial field.</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>FW5810</td>
<td>Research Methods in Natural Resources</td>
<td>Overview of science and scientific research. The process of graduate education including choosing an advisor, selecting a research problem, writing a thesis proposal, scientific hypothesis testing, analysing data, and communicating results through various media.</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>SU5800</td>
<td>Geospatial Master’s Graduate Seminar</td>
<td>Student presentation of current geospatial research in a traditional seminar setting.</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>SU5998</td>
<td>Graduate Practicum</td>
<td>Advanced independent study for students in the Integrated Geospatial Technology Master’s program. In consultation with student's advisor, develop and execute a project demonstrating capabilities in problem solving, communications, and decision making. The practicum can be done on campus or at the site of a Michigan Tech corporate partner.</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>SU5999</td>
<td>Master’s Graduate Research</td>
<td>Research of an acceptable geospatial related problem and preparation of a thesis.</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>SU5002</td>
<td>Infrared Technology, Sensors, and Applications</td>
<td>Infrared remote sensing fundamentals, current and future technologies, and applications are considered. Remote sensing for both civilian applications such as environmental resource mapping</td>
<td>1</td>
</tr>
<tr>
<td>Course Code</td>
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<td>Credits</td>
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</tr>
<tr>
<td>SU 5003</td>
<td>Geographic Information Systems (GIS) Technology Fundamentals</td>
<td>Course provides review of Geographic Information Systems applications and analysis and is intended for students who are not specializing in GIS. Includes core concepts such as data acquisition and management, topology, accuracy, metadata, output, quality control, analysis methods, new and traditional software options, web mapping, and GIS implementation/management for research and production.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SU 5004</td>
<td>Introduction to Geospatial Image Processing</td>
<td>Introduction to the basic concepts of image processing and understanding. Applications focus on pre-processing of satellite and aerial images, remote sensing, and image/video enhancement. This course will provide mathematical foundations and explore modern practical algorithms and methods.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SU5020</td>
<td>Data Analysis and Adjustments</td>
<td>Course explores fundamentals of mathematical error propagation theory including various equations of observation, least squares adjustments, and Kalman filter methods. Blunder detection, decorrelation, and inversion of patterned and large matrices processes are considered. Involves analysis of position estimation deploying geospatial measurements.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SU5021</td>
<td>Geodetic Models</td>
<td>Course provides solid geospatial background in geodetic reference frames: datum; geoids; and reference ellipsoids. 2D and 3D geodetic network adjustments are considered based on 3D spherical models.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SU5022</td>
<td>Positioning with GNSS</td>
<td>In depth study of GPS, GLONASS, Galileo, COMPASS satellite systems, theory, and processing of global positioning measurements. Strongly recommended for geospatial practitioners.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SU5023</td>
<td>Geospatial Positioning</td>
<td>High-level summary of GPS-GAP courses. This course is intended for interdisciplinary graduate students who seek just ONE combination course in adjustments, geodesy and</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
GPS (with emphasis on GPS/GNSS). Not available to students who have taken SU5020, SU5021, SU5022.

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>SU5041</td>
<td>Geospatial Data Processing</td>
<td>Advanced data collection techniques; raster to vector; data conversion and map projections; topology; principles and application via advanced spatial analysis; advanced database structure; geo-database; georelational data model versus object-component data model; advanced 3D applications; vector and raster data model application; network analysis; linear referencing and conflation; geocoding, GIS-CAD integration; Web-based GIS innovations.</td>
</tr>
<tr>
<td>SU5042</td>
<td>Digital Cartography</td>
<td>Spatial relations – topology, relations and relationships, directions and distances; hierarchy; generalization – vector (linear, polygonal, fractals) and raster; labelling – automatic name placement, text arrangement and deletion text; computational geometric algorithms – line intersection, polygonal relationships, grid model, route analysis.</td>
</tr>
<tr>
<td>SU5043</td>
<td>Topographic Analysis</td>
<td>LiDAR measurements; DSM - data sources, accuracy analysis, quality control, vector data analysis; terrain representation and TIN; grid analysis - interpolation, visibility, filers (smoothing, edges, median); shading; merging overlapping DSMs; spatial analysis - spectral analysis shape analysis; automatic feature extraction from DSM.</td>
</tr>
<tr>
<td>Course Code</td>
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<td>Description</td>
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<tr>
<td>SU5930</td>
<td>Synthetic Aperture Radar (SAR) Fundamentals and Applications</td>
<td>Review of radar concepts, applications of SAR (InSAR) data, types of available satellite/airborne systems, and data processing methods. Applications for creating topographic data, recognizing targets, classifying ice and vegetation, and oceans/large lakes will be presented based on real-world examples.</td>
</tr>
<tr>
<td>FW5560</td>
<td>Digital Image Processing: Remote Sensing Perspective</td>
<td>Presents the theory and quantitative procedures of digital image processing using remotely sensed data. Emphasizes image acquisition, pre-processing, enhancement, transformation classification techniques, accuracy assessment, and out-products. Discusses linkages to GIS. Also covers evaluating applications of the technology to current resource management problems via peer-reviewed literature.</td>
</tr>
<tr>
<td>SU3540</td>
<td>Geospatial Information Technology with Elements of Field Cartography</td>
<td>Application of GIS technology methods for processing surveying data obtained in the field. Concepts of interoperability and metadata organization are considered. Includes map projection review and 2D and 3D cartographic data visualization.</td>
</tr>
<tr>
<td>SU5044</td>
<td>Cartographic Remote Sensing</td>
<td>The course offers analytical and descriptive instruments useful to understand metric and semantic contents of the cartographic products. The expected skills of the course and the principal topics are: knowledge of the reference and coordinate systems used in modern and historic cartography, knowledge of the most used numerical cartographic products (e.g. digital cartography, orthophotomaps, digital terrain models, etc.), knowledge of the digital cartography production technologies, understanding of the cartographic products used for the spatial planning, management of cartographic products based on different reference and coordinate systems, validation of the contents of the cartographic products, communication of spatial themes on different cartographic products. Moreover a part of the course will be focused on the available Very High Resolution satellite systems that acquire remote sensing data for cartographic production.</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Description</td>
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<tr>
<td>SU5045</td>
<td>Geospatial Data Fusion</td>
<td>Course challenge is to provide students with how to combine and fuse different sensory data to extract useful information for their application. Some data are supporting other data, while some are complimenting. It is important to understand the characteristics of each type of data and the techniques that are being used in their field. Theories, review of current papers focusing on this idea, and a term-project will help to perform the researches of their own. Presentation on how the idea is developed and how the conclusion is made is also a focus.</td>
</tr>
<tr>
<td>SU5541</td>
<td>Close-range photogrammetry</td>
<td>Course comprises following main topics:</td>
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<td></td>
<td>- Math fundamentals, Imaging technology,</td>
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<tr>
<td></td>
<td></td>
<td>- Photogrammetric process, Image acquisition planning, Interior orientation, Bundle block adjustment, 3D plotting, Orthoprojection, Image-matching techniques, Close Range photogrammetry applications, Lab component included.</td>
</tr>
<tr>
<td>SU5480</td>
<td>Cadastre</td>
<td>Land rights - an introduction, Land ownership, land lease, land access, traditional rights, Mortgaging and Land as Capital, Description of land rights, Boundary description, Cadastre 2014 by FIG, Different examples for cadastre types over the globe, Modern technical approaches.</td>
</tr>
<tr>
<td>EE 5725</td>
<td>Mobile Robotics &amp; Multi-Robot Systems</td>
<td>Introduction to mobile robotics and multi-robot systems. Introduce spatial description, mobile robot locomotion, kinematics, localization and mapping, motion planning and navigation. Topics in multi-robot systems include biological inspirations, control structure, inter-robot communication, learning in multi-robot systems, and modelling</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Description</td>
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<td>-------------</td>
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</tr>
<tr>
<td>EE 5522</td>
<td>Digital Image Processing</td>
<td>Image formation, enhancement, and reconstruction. Applications in medical imaging, computer vision, and pattern recognition.</td>
</tr>
<tr>
<td>FW 5540</td>
<td>Advanced Terrestrial Remote Sensing</td>
<td>Remote sensing principles and concepts at the graduate level. Topics include camera and digital sensor arrays, types of imagery, digital data structures, spectral reflectance curves, applications and introductory digital image processing.</td>
</tr>
<tr>
<td>FW 5550</td>
<td>Geographic Information Systems for Resource Management</td>
<td>Use of geographic information systems (GIS) in resource management. Studies various components of GIS in detail, as well as costs and benefits. Laboratory exercises use ArcGIS software package to solve resource management problems.</td>
</tr>
<tr>
<td>FW 5560</td>
<td>Digital Image Processing: A Remote Sensing Perspective</td>
<td>Presents the theory and quantitative procedures of digital image processing using remotely sensed data. Emphasizes image acquisition, pre-processing, enhancement, transformation classification techniques, accuracy assessment, and out-products. Discusses linkages to GIS. Also covers evaluating applications of the technology to current resource management problems via peer-reviewed literature.</td>
</tr>
<tr>
<td>GE 4100</td>
<td>Geomorphology and Glacial Geology</td>
<td>The study of the processes, including fluvial, glacial, wind, mass movement, and wave action, shaping the earth's surface by erosion and deposition of geologic materials. Emphasizes the role of past and present climate. Field trips are a major component.</td>
</tr>
<tr>
<td>GE 4250</td>
<td>Fundamentals of Remote Sensing</td>
<td>This course focuses on the basic physics behind above-surface remote sensing and remote sensing systems. Topics covered include: properties of the atmosphere, absorption and scattering of</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Description</td>
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<tr>
<td>SS 5300</td>
<td>Environmental &amp; Energy Policy</td>
<td>An overview of environmental policymaking and politics in the U.S. Emphasizes policies regarding air and water pollution, toxics and hazardous waste. Discussion of rulemaking, enforcement, and administration of laws by EPA. Investigation of environmental politics on national and community levels, with focus on social movements and citizen participation.</td>
</tr>
<tr>
<td>SS 5350</td>
<td>Environmental Policy Analysis</td>
<td>The role of economic analysis in environmental policy, including a detailed review of the major tools that are used at the federal, state, regional, and local levels. Special emphasis on benefit-cost analysis and comparative risk analysis.</td>
</tr>
<tr>
<td>SU 4100</td>
<td>Geodetic Positioning</td>
<td>Introduces the instruments and procedures used in surveying projects that require a high order of accuracy. Discusses some conventional instruments and techniques but the greater emphasis is on GPS techniques.</td>
</tr>
<tr>
<td>SU 4140</td>
<td>Photogrammetry</td>
<td>Basic principles of photogrammetry and its role as a technology for spatial data collection. Use of Photogrammetry in the fields of surveying, engineering, and geographic information.</td>
</tr>
</tbody>
</table>
## Description of a Dual Degree master program courses delivered at the Siberian State Academy of Geodesy

<table>
<thead>
<tr>
<th>№</th>
<th>Course code</th>
<th>Course</th>
<th>Course description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ОЦВ.М.1.1</td>
<td>Foreign Language</td>
<td>The course is aiming at a practical grasp of both everyday speech and specialty language for the achievement of the level of proficiency in the foreign language, allowing a student to continue training at PhD courses, fulfill scientific and professional activities in the foreign-language environment.</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>ПЦВ.М.2.1</td>
<td>3D Laser Scanning and Object Modelling</td>
<td>Theoretical basis of laser scanning; practical skills of work with terrestrial laser scanners; data processing for engineering and geodetic tasks; introduction to methods of automated surveying, characteristics of field and office phases and laser scanning data processing. Application of laser scanning products.</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>ОЦБ.М.1.1</td>
<td>Advanced Computer and Information Technologies</td>
<td>Methodology of data storage development, use of multidimensional cube theory based on OLAP methodology; large data base development with the help of DBMS; technologies of efficient data analysis, advanced IT methods of measurements and geospatial data processing; methods of mathematical processing and assessment of geospatial data’s analysis.</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>ПЦБ.М.2.1</td>
<td>IT in Surveying and Remote Sensing</td>
<td>Overview of the integral knowledge system in the field of geodetic science and practice; new methods of geospatial data measurements and processing; analysis of digital modelling and mapping methods based on the terrestrial surveying and remote sensing data; analysis of mathematical processing and spatial data estimation.</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>ПЦБ.М.2.2</td>
<td>Automated Systems of Collecting and Remote Sensing Data Processing</td>
<td>Overview of the integral understanding of the advanced level of remote sensing and photogrammetry automated systems of data acquisition and processing. Introduction to main trends in the development of remote sensing systems and perspectives of their application, photogrammetric methods of heterogeneous data processing.</td>
<td>2</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Description</td>
<td>Credits</td>
<td></td>
</tr>
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<td>------------</td>
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<td>---------</td>
<td></td>
</tr>
<tr>
<td>ПЦВ.М.2.2</td>
<td>Intellectual Property Objects Valuation</td>
<td>Understanding of significance of intellectual property as an object of economy. Nature of creating and introduction of different kinds of intellectual property, approaches and methods of its valuation. Introduction to the theory of intellectual property generation; practical skills of knowledge implementation.</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>ПЦВ.М.2.3</td>
<td>Geographic and Informational Technologies in Management of Territorial Forms of Government</td>
<td>Skills of different software tools application for land management and cadastral problems solving. Production and planning activities in the field of project development with usage of advanced aids of information acquisition and processing; automatization of data acquisition and processing processes; search and analysis of scientific information for solving engineering problems.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>ПЦВ.М.2.3</td>
<td>Mathematical Processing and Analysis of Geodetic Measurements</td>
<td>The course gives principles of contemporary algorithms of geospatial data processing and analysis. Additional parts of matrix algebra and statistics, synthesized algorithms of the results of geodetic measurements optimisation by least-squares method are given.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ПЦВ.М.2.4</td>
<td>Principles of Creating and Spreading of State Geodetic Networks</td>
<td>Review of traditional and satellite geodesy methods to develop state geodetic networks. When planning the creation/development geodetic networks students fulfil research work, complex experiments with satellite equipment; mathematical processing and analysis of the results, planning as well as research and methodological program planning for satellite equipment.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ПЦВ.М.2.4</td>
<td>Geodetic Monitoring of Engineering Structures</td>
<td>The theory of common principles, methods and technologies of geodetic control of geometric parameters in the process of construction and buildings maintenance.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ПЦВ.М.2.5</td>
<td>Substantial and Applied Spatial and Time Support of Surveying and Remote Sensing Tasks</td>
<td>Modelling of the processes in geodesy, geodynamics and remote sensing; mathematical interpretation of models and processes; delimitation of applied models and assumptions; algorithms and technics in the field of geodesy and geodynamics development; experiments, processing and analysis of the results; project and research work reviewing; expertise of technics and documentation of topographic and remote</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>ОЦБ.М.1.2</td>
<td>Philosophical Problems in Science and Technology</td>
<td>Within the course philosophy and methodology of science and technics is studied; students are given understanding of science as a system of knowledge about technics and man. Students are given skills and knowledge of scientific, research and professional activities.</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>ОЦБ.М.2.5</td>
<td>Substantial and Applied Spatial and Time Support of Surveying and Remote Sensing Tasks</td>
<td>Modelling of the processes in geodesy, geodynamics and remote sensing; mathematical interpretation of models and processes; delimitation of applied models and assumptions; algorithms and technics in the field of geodesy and geodynamics development; experiments, processing and analysis of the results; project and research work reviewing; expertise of technics and documentation of topographic and remote</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>No.</td>
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<td>Description</td>
<td>Credits</td>
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<tr>
<td>13</td>
<td>ПЦВ.М.2.5</td>
<td>Analysis and Performance Evaluation of Scientific Activities</td>
<td>Principles of research methods, planning, financing, and management; analysis of research activities’ efficiency; applied management systems improvement; practical skills and knowledge of research work, analysis, assessment, and prediction of the situations.</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>ПЦВ.М.2.6</td>
<td>Study of Management Systems</td>
<td>Principles, methodologies and technics of management systems; analysis of their efficiency; decision making; development of the management system. Practical skills and knowledge in management, analysis of situations, prediction and understanding of their impact in future.</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>ОЦВ.М.1.2</td>
<td>Human Resources Management</td>
<td>Introduction to management and development of human resources in the market, skill of efficient cooperation with human resources specialists. Role of the staff in management; existing technics of human resources management; manpower reserves; principles of human resources management.</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>ПЦВ.М.2.7</td>
<td>Investment Management</td>
<td>Investments as a system and continuous process. Trends, potentials, and forecasts of investment processes development; technics of investment management; approaches of investment management in research works.</td>
<td>6</td>
</tr>
<tr>
<td>17</td>
<td>ОЦВ.М.1.3</td>
<td>Ethics of Business Communication</td>
<td>Knowledge and skills of communication in the field of professional activities. Enhancement of professional communication; skills of people understanding; relations among people; skills of efficient listening and public presentation; processes of self-knowledge and self-actualization; development of creativity.</td>
<td>5</td>
</tr>
<tr>
<td>18</td>
<td>ПЦВ.М.2.8</td>
<td>Geodetic Methods of Geodynamic Processes Examination (additional to ПЦВ.М.2.9)</td>
<td>Modelling of geodynamic processes; algorithms and technics of geodynamic processes analysis; processing and analysis of surveying works; reviewing and expertise of projects, inventions, researches, new technics, and documentation; geodynamic monitoring of natural and anthropogenic situations; GPS and telecommunication systems in surveying and monitoring.</td>
<td>5</td>
</tr>
<tr>
<td>19</td>
<td>ПЦВ.М.2.9</td>
<td>Applied Gravimetry</td>
<td>Modelling of geodetic, geodynamic and remote sensing processes; mathematical</td>
<td>4</td>
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</tbody>
</table>
interpretation of relationship in models and processes; delimiting of the applied models and assumptions; experiments, processing and analysis of results; Earth and planets’ physical fields study; high precision measurements in surveying, geodynamics and remote sensing; synthesis of geodetic, aerial and space information, etc. for the needs of cartography, research and industrial activities; natural resources and nature management monitoring.

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<tr>
<th>№</th>
<th>Название</th>
<th>Описание</th>
<th>Количество</th>
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</thead>
<tbody>
<tr>
<td>20</td>
<td>ПЦБ.М.2.10  Advanced Automated Geodetic Systems (additional to ПЦБ.М.2.2)</td>
<td>Devices and technologies of advanced automated geodetic complexes application. Characteristics of advanced geodetic complexes in different fields of geodesy. Execution of research activities with high precision automated geodetic equipment.</td>
<td>7</td>
</tr>
</tbody>
</table>
MICHIGAN TECHNOLOGICAL UNIVERSITY  
SCHOOL OF BUSINESS AND ECONOMICS  

PROPOSAL FOR NEW GRADUATE PROGRAM  

MASTER OF SCIENCE IN ACCOUNTING (MSA)  

1. General Descriptions and Characteristics of Program  
   
The School of Business and Economics (SBE) proposes a Master of Science in Accounting (MSA) beginning Fall 2014. The 30 credit hour Plan D coursework program is designed to attract students with and without undergraduate degrees in accounting who wish to earn a graduate degree. Curriculum is designed to allow students to sit for professional certification exams, most notably the Certified Public Accountant (CPA) exam. Students would enter the program in the fall semester and could graduate in three semesters (fall, spring, summer).

Should this proposal be approved, the SBE would also plan to offer an Accelerated Master’s Program (BS/MSA).

2. Rationale  
   
Several factors support offering an MSA program:

A. The University’s Strategic Plan  

   Goal 3.1 in the proposed Strategic Plan for the University calls for a growth in research and graduate education. This goal is quantified in the “Portrait of Michigan Tech 2035” which projects 3,000 graduate students, a “significant proportion of [which] will be enrolled in 5 year accelerated masters program or take on-line degree options.” (Portrait of Michigan Tech 2035, Point 2 in Narrative)

   The MSA program will help the University achieve its Strategic Plan and meet projected enrollment goals by expanding graduate program offerings and increasing graduate student enrollment.

B. The 150-hour CPA Requirement  

   In order to obtain a CPA license, a student must have earned at least 150 credit hours, which includes a required number of credit hours in accounting. While it is not necessary to hold a master’s degree to sit for the CPA exam, students realize greater market utility by completing a master’s program to fulfill the 150-hour requirement as opposed to merely taking additional undergraduate level courses or double-majoring. The existing MBA program offered by the SBE is focused
on innovation and technology, and is therefore not as suitable as a master’s program focused in accounting for a student wanting to sit for the CPA exam.

C. Enrollment in the SBE Accounting Program

Undergraduate Enrollment

<table>
<thead>
<tr>
<th>Fall Year</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2008</td>
<td>66</td>
</tr>
<tr>
<td>Fall 2009</td>
<td>71</td>
</tr>
<tr>
<td>Fall 2010</td>
<td>80</td>
</tr>
<tr>
<td>Fall 2011</td>
<td>89</td>
</tr>
<tr>
<td>Fall 2012</td>
<td>73</td>
</tr>
<tr>
<td>Fall 2013</td>
<td>57</td>
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</tbody>
</table>

While the enrollment in the accounting program has declined in the past two years, it is consistent with an overall drop in students within the SBE during the same period. The percentage of accounting students within the SBE remained steady at 16-18%, representing one of the largest majors within the SBE. The number of undergraduate students in the SBE began to increase in Fall 2013 and we are projecting that the accounting program will remain at 16-18% of undergraduate enrollment, increasing to a level of 64-72 students.

In addition, there are a number of recent graduates (2010 – 2012) of the accounting program who have expressed an interest in entering the MSA program.

D. Increase in Hiring of Accounting Graduates with Master’s Degrees

From 2008-2018, a 22% increase in accounting employment positions is projected. (United States Bureau of Labor Statistics Occupational Outlook Handbook)

In 2010, 37% of new hires by CPA firms held a master’s degree; up from 26% and 14% in 2008 and 2000, respectively. (AICPA 2011 Trends in the Supply of Accounting Graduates and the Demand for Public Accounting Recruits)

New hires by CPA firms of applicants holding only an undergraduate degree decreased from 56% to 40% between 2008 and 2010. (AICPA 2011 Trends in the Supply of Accounting Graduates and the Demand for Public Accounting Recruits)

Starting salaries for graduates with master’s degrees are 10-20% higher than those with only undergraduate degrees. (AICPA 2011 Trends in the Supply of Accounting Graduates and the Demand for Public Accounting Recruits)

By 2018, it is estimated that 21% of all employees in Professional and Business Services will have attained a master’s degree, up from 16% in 2008. (Georgetown
3. Discussion of Related Programs Within the Institution and at Other Institutions

The SBE currently offers the Tech MBA and Tech MBA Online. One existing MBA course would be cross-listed with the MSA program, ACC5300/BA5300 Financial Reporting and Control. Students in the proposed MSA program could also complete up to 12 additional credit hours in the existing MBA program.

Regionally, the following AACSB-accredited business schools have a graduate accounting program:

**Michigan**

- Central Michigan University*
- Eastern Michigan University
- Grand Valley State University*
- Michigan State University*
- Oakland University*
- University of Michigan – Ann Arbor
- University of Michigan – Dearborn
- University of Michigan - Flint
- Wayne State University
- Western Michigan University*

**Wisconsin**

- Marquette University*
- University of Wisconsin – Madison*
- University of Wisconsin – Whitewater

Asterisk indicates business school has also earned separate AACSB accreditation of its accounting program.

4. Projected Enrollment

- Fall 2014 – 12 students
- Fall 2015 – 15 students
- Fall 2016 – 18 students

There are two possible courses of study a student may complete to earn a master’s degree:
Track One – Accelerated Program for Michigan Tech Accounting Majors

A proposal for an accelerated master’s will be developed in accordance with Senate and University policies should this proposal be approved.

Track Two – Students Other Than Michigan Tech Accounting Majors

Designed for students who do not have an undergraduate degree in accounting and want to earn a graduate degree in accounting. In addition to meeting MSA program admission requirements, students would also have to complete the following courses (each 3 credit hours), or transfer equivalents, with a grade of B or better in each:

Prerequisites

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 2000</td>
<td>Accounting Principles I (Financial)</td>
</tr>
<tr>
<td>ACC 3000</td>
<td>Accounting Theory/Practice I (Intermediate 1)</td>
</tr>
<tr>
<td>ACC 3100</td>
<td>Accounting Theory/Practice II (Intermediate 2)</td>
</tr>
</tbody>
</table>

or

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 5000</td>
<td>Accounting Foundations I</td>
</tr>
<tr>
<td>ACC 5050</td>
<td>Accounting Foundations II</td>
</tr>
</tbody>
</table>

(These 6 credits would NOT apply toward the 30 credit hour degree requirement.)

Additional Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 4100</td>
<td>Attestation and Assurance</td>
</tr>
<tr>
<td>ACC 4800</td>
<td>Accounting Systems</td>
</tr>
</tbody>
</table>

At present, the SBE graduates approximately 30 undergraduate accounting majors per year. In the attached revenue projections, we assume that 10 of those students (Track One above) and 2 non-accounting majors (Track Two above) would enter the MS program in Year One. Track One and Track Two enrollment would grow by two and one students, respectively, in Year Two and Year Three of the program.

5. Scheduling Plans (Extension, Evening, Regular)

Regular class times will be offered with this degree program.
6. Curriculum Design (refer to format of degree audit form). Indicate Subject Areas to be Used for Departmental GPA Calculation

Program Overview

30 credit program; all courses are 3 credits
Must complete at least 18 graduate level accounting credits
May take up to 12 credits at the 4000 level; 3000 level courses are not permitted
Seven new graduate level accounting courses

Summer Semester

Prerequisite Accounting Courses

ACC 5000 Accounting Foundations I
ACC 5050 Accounting Foundations II

(These course will only be taken if needed to satisfy prerequisite requirements and do not count toward the 30 credit hour degree requirement.)

Fall Semester

Required Accounting Course

ACC 5300 Financial Reporting and Control
ACC 5200 Financial Statement Analysis

Spring Semester

Required Accounting Course

ACC 5100 Advanced Auditing and Fraud Examination
ACC 5800 Advanced Accounting Systems

Summer Semester

Required Accounting Courses

ACC 5600 Taxation for Decision Makers
ACC 5900 Current Issues in Public Accounting

The summer semester will take place during Track A.
Summary of Required Graduate Level Accounting Courses (18 credits)

ACC 5000  Financial Reporting and Control
ACC 5200  Financial Statement Analysis
ACC 5100  Advanced Auditing and Fraud Examination
ACC 5800  Advanced Accounting Systems
ACC 5600  Taxation for Decision Makers
ACC 5900  Current Issues in Public Accounting

Summary of Approved Graduate Electives (12 credits)

Accounting

ACC 4100  Attestation and Assurance
ACC 4200  Advanced Accounting
ACC 4500  Managerial/Cost Accounting II
ACC 4600  Advanced Tax Topics
ACC 4700  Governmental and Not for Profit Accounting
ACC 4800  Accounting Systems

Finance

FIN 480X  Applied Portfolio Management

Business Courses Presently Offered in the MBA Program

BA 5200  Strategic IS Management
BA 5390  Special Topics in Accounting
BA 5400  Financial Risk Management and Decision Making
BA 5610  Business Process Management
BA 5700  Managing Behavior in Organizations
BA 5710  Business and Corporate Strategy
BA 5720  Launching Entrepreneurial Ventures
BA 5740  Managing Innovation and Technology
BA 5770  Managing Change
BA 5780  Managing in the Global Environment
BA 5800  Marketing, Technology, and Globalization
BA 5900  MBA Internship

Business Courses in the Catalog, Not Presently Offered in the MBA Program

BA 5410  Finance II
BA 5460  Derivative Securities
BA 5490  Special Topics in Finance
BA 5630  Operations Strategy
BA 5640  Global Operations and Supply Chain Management
BA 5650 Project Management
BA 5670 Business Process Simulation
BA 5690 Special Topics in Operations and Systems Management
BA 5730 Growing and Managing New Ventures
BA 5790 Special Topics in Management
BA 5890 Special Topics in Marketing

Economics

EC 5000 Microeconomics
EC 5010 Macroeconomics
EC 5300 Managerial Economics
EC 5400 Advanced Engineering Economics

Mathematics

MA 4710 Regression Analysis
MA 4760 Mathematical Statistics I
MA 4770 Mathematical Statistics II
MA 5701 Statistical Methods

7. New Course Descriptions

**ACC 5000 Accounting Foundations I**

Introduction to basic theories, concepts, and practices to understand fundamental accounting principles and the resultant financial statements. Topics include the decision-making environment, accounting cycle, financial measurement and reporting.

**ACC 5050 Accounting Foundations II**

Continuation of ACC 5000 with theories, concepts and practices underlying financial measurement and reporting. Topics include income measurement, cash flows, fair value reporting, and multinational issues.

**ACC 5300/BA 5300 Financial Reporting and Control**

This course focuses on the collection, reporting and analysis of financial information with emphasis on the use of that information to support decision making.

**ACC 5100 Advanced Auditing and Fraud Examination**

An in-depth study of auditing with a focus on fraud examination from an external auditor’s perspective. The course utilizes problems, cases, and projects relating to
fraud examination and forensic accounting.

**ACC 5200 Financial Statement Analysis**

Study of financial statement analysis and concepts of valuation utilizing accounting based financial information. Methods are applied to encompass decision making, communication, and judgment using problems, cases, and projects.

**ACC 5600 Taxation for Decision Makers**

This course focuses on how taxes impact management decision making. Advanced tax planning techniques are studied to develop analytical, research, and professional communication skills.

**ACC 5800 Advanced Accounting Systems**

This course presents a comprehensive understanding of accounting information systems and advanced technology in the accounting environment. It emphasizes how to use these tools to enhance financial decision making. Topics include contemporary technology and applications.

**ACC 5900 Current Issues in Public Accounting**

This course examines current issues in the accounting profession. Designed as a capstone course to further understand concepts introduced in prior coursework through the analysis of contemporary accounting issues.

8. **Library and Other Learning Resources**

No new library or other learning resources will be required by the MSA program.

9. **Computing Access Fee**

Computing Access Fees for the MSA will be the same as other graduate programs offered by the SBE.

10. **Faculty Resumes**

Presently, the SBE has three full-time (two tenure-track) and one half-time faculty members in the accounting program:

   Assistant Professor Liang Song (accounting systems)
   Assistant Professor Joel Tuoriniemi (taxation)
   Senior Lecturer Anne Warrington (managerial)
   Instructor Sheila Milligan (forensic)
The SBE is currently recruiting to replace a tenure-track faculty member who departed Fall 2013.

Funding approval has also been received to hire one additional senior level (tenured/tenure-track) faculty member. The SBE is currently recruiting to fill this position as well, which will be required to offer the proposed program. (See Section 12 below).

Assuming successful hires, the SBE would have five full-time (four tenured/tenure-track) and one half time-faculty members.

Curriculum Vitae can be found at http://www.mtu.edu/business/school/faculty-staff/faculty/

11. Description of Available/Needed Equipment

No additional equipment will be required by either program.

12. Program Costs – Years 1, 2 & 3

One additional senior level (tenured/tenure-track) faculty member will be required to offer the MSA. Projected compensation cost, inclusive of fringe benefits, is $195,000. A portion of this compensation cost is being offset as a result of realignment of faculty resources within the SBE.

Please refer to the attached revenue projections for further information.

13. Space

Additional time in existing classrooms will be required to offer the five new graduate level accounting courses.

14. Policies, Regulations and Rules

Not Applicable

15. Accreditation Requirements

AACSB provides accreditation of institutions for both its business and accounting programs. At present, the SBE business program has achieved AACSB accreditation. The MSA program would initially be part of that level accreditation, and the SBE would seek separate accreditation of the accounting program as soon as possible (the next accreditation visit will occur during the 2015-16 academic year.)
16. Internal Status of the Proposal

Faculty, School of Business and Economics  Approved Unanimously, 03/22/12
Dean, School of Business and Economics  Approved, 09/20/2013
Provost  Submitted for Consideration
University Support Units
  Deans’ Council  Approved, 09/25/2013
  Graduate Council  Submitted for Consideration
University Senate  Submit for Consideration – November 2013
Board of Control  Submit for Consideration – December 2013 or April 2014

17. Planned Implementation Date

Fall 2014
Student Profiles: We assume two types of students that will enroll in the MSA program: existing MTU Undergraduate Accounting Majors (BS/MSA) and Students other than MTU Accounting Majors (MSA).

Existing MTU Undergraduate Accounting Majors are further divided into two categories: those that would have attended graduate school elsewhere (BS/MSA) and those that would have remained at MTU to meet the 150 hour CPA education requirement by taking additional undergraduate credit hours (BS/MSA*).

**BS/MSA:** MTU Undergraduate Accounting Student that would have attended graduate school elsewhere; these students will pay for 24 additional graduate credit hours @ $789 per hour

**BS/MSA*: MTU Undergraduate Accounting Students that would have taken 24 additional undergraduate credit hours at MTU at the resident rate, but enroll in the graduate program instead for 24 graduate level credits; these students will generate a tuition differential of $340.00 per credit hour (the difference between what would have been paid at the undergraduate rate versus what will be paid at the graduate rate)

**Credit Hour Charge:**
- Graduate Tuition Per Credit Hour $789
- Undergraduate Tuition Per Credit Hour ($449) Plateau Tuition of $6,735 / 15 credit hours
- Tuition Differential (for BS/MSA* students below) $340

**BS/MSA NR*: MTU Undergraduate Accounting Students that would have taken 24 additional undergraduate credit hours at MTU at the non-resident rate, but enroll in the graduate program instead for 24 graduate level credits; these students will generate a negative tuition differential of $196.00 per credit hour (the difference between what would have been paid at the undergraduate rate versus what will be paid at the graduate rate)

**Credit Hour Charge:**
- Graduate Tuition Per Credit Hour $789
- Undergraduate Tuition Per Credit Hour ($985)
- Tuition Differential (for BS/MSA* students below) ($196)

**MSA:** Students other than MTU Accounting Majors that enter the MSA Program; these students will pay for 30 graduate credit hours @ $789 per hour
### Year 1-3 Revenue

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Graduate Credits</th>
<th>Credit Hour Cost</th>
<th>Tuition Revenue</th>
<th>Total Tuition Revenue</th>
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<td>Year 1</td>
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<tr>
<td>BS/MSA</td>
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<td>24</td>
<td>$789.00</td>
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<td>$16,320.00</td>
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<tr>
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<td>$(196.00)</td>
<td>$(4,704.00)</td>
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<tr>
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<td>$47,340.00</td>
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<tr>
<td></td>
<td>12</td>
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<td>$191,508.00</td>
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<td>Year 2</td>
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<tr>
<td>BS/MSA</td>
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<tr>
<td>BS/MSA*</td>
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<td>24</td>
<td>$340.00</td>
<td>$16,320.00</td>
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<tr>
<td>BS/MSA NR*</td>
<td>2</td>
<td>24</td>
<td>$(196.00)</td>
<td>$(9,408.00)</td>
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</tr>
<tr>
<td>MSA</td>
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<td>$71,010.00</td>
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<td></td>
<td>15</td>
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<td>$229,410.00</td>
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<td>Year 3</td>
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<td>BS/MSA</td>
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<tr>
<td>BS/MSA*</td>
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<td>24</td>
<td>$340.00</td>
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<tr>
<td>BS/MSA*</td>
<td>2</td>
<td>24</td>
<td>$(196.00)</td>
<td>$(9,408.00)</td>
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<tr>
<td>MSA</td>
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<td>18</td>
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<td></td>
<td>$280,176.00</td>
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</tr>
</tbody>
</table>
The University Senate of Michigan Technological University
Proposal XX-XX
(Voting Units: Academic)
“Master’s of Science Degree Program in Kinesiology”

1. GENERAL DESCRIPTION
The faculty members of the Department of Kinesiology and Integrative Physiology (KIP) at Michigan Technological University seek to establish a Master’s of Science (MS) program in Kinesiology. We propose both a thesis (Plan A) and coursework (Plan D) option focused on existing and emerging departmental strengths.

2. RATIONALE
The KIP department offers two B.S. degrees within the fields of kinesiology and integrative physiology, but does not currently offer a graduate degree. Over the past 6 years, KIP faculty have advised graduate students via adjunct status through the following programs: Biological Sciences (7 graduated students over past 4 years; 3 current students), Human Factors (1 graduated student), and Biomedical Engineering (1 current student). Our motivations for a MS in Kinesiology include the following:

- With 4 tenure/tenure-track faculty, two ongoing tenure-track searches, four lecturer/instructors with MS degrees, and several key adjunct appointments with specialties related to kinesiology, the department finally has the critical mass to offer a nationally competitive graduate degree in Kinesiology. Having a graduate program in the department will provide increased national and international visibility, which is consistent with the Michigan Tech Strategic Plan and assist with enhanced recruitment of premiere students and faculty.
- Kinesiology and integrative physiology are highly interdisciplinary fields, as evidenced by our engagement in graduate education with Biological Sciences, Human Factors, and Biomedical Engineering. While we intend to continue a strong interdisciplinary component, there is a need to consolidate our current graduate students and faculty. The proposed degree aims to strengthen intra-departmental graduate research and teaching without damaging the existing strong interdisciplinary interactions.
- Inside Higher Ed recently reported that kinesiology is “one of the fastest-growing majors in the country.” Accordingly, there is a strong base of undergraduate students to draw from for this graduate program, and a need for high-quality graduate programs. (http://www.insidehighered.com/news/2010/08/11/kinesiology).
- While 5th year MS programs are currently more common within Michigan Tech Engineering programs, there are areas within the College of Sciences and Arts where course-based MS programs may be desirable to students. We believe Kinesiology represents such an opportunity because many of our undergraduates that do not pursue a professional graduate degrees (i.e., medical school, physical therapy, physician assistant, etc.) go on to get a MS to make them more competitive for a career in strength and conditioning, fitness, or sports administration. Moreover, 5th year course-based MS programs are professionally acceptable for many of these fitness/administrative careers. In short, we believe there is a market for a 5th year course-based MS in Kinesiology.

3. RELATED PROGRAMS
3.1. Related Programs at Michigan Tech
The programs most closely related to the proposed Kinesiology MS program are the Biological Sciences, Applied Cognitive Science and Human Factors, and Biomedical Engineering MS programs. Of those degrees, only Biomedical Engineering has the coursework option. In the case of coursework options, required coursework tends to be more prescribed than the thesis options. The average student completes the thesis-based MS in 2-3 years, while the course-based MS is completed in 1-2 years. We have designed our Kinesiology MS degree with these successful programs as a template.

3.2. Related Programs at Other Institutions

There are 8 Michigan public universities that offer Master's degree programs in the field of kinesiology. We critically evaluated the MS programs offered in Michigan to ensure that our graduates will be competitive with those from other institutions. We found that many programs have similar core requirements, and that several have coursework options (including University of Michigan-Ann Arbor). Those with coursework options tend to be more prescriptive with required courses and/or include a graduate-level internship; our proposed program does both. Many of the existing programs also have specific concentrations (or areas of research), spanning exercise physiology, biomechanics, and motor behavior. Our program will be focused toward exercise physiology and general fitness/strength & conditioning, which represent two existing and emerging strengths in the department.

Table 1. Related programs in Michigan

<table>
<thead>
<tr>
<th>Institution</th>
<th>Master's Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Michigan University</td>
<td>MA, Exercise Science; MA, Sports Administration; MA, Therapeutic Recreation</td>
</tr>
<tr>
<td>Eastern Michigan University</td>
<td>MS, Exercise Physiology; MS, Sports Management; MS, Physical Education Pedagogy; MS, Health Education</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>MS, Kinesiology (8 concentrations)</td>
</tr>
<tr>
<td>Northern Michigan University</td>
<td>MS, Exercise Science</td>
</tr>
<tr>
<td>Oakland University</td>
<td>MS, Exercise Science</td>
</tr>
<tr>
<td>Univ of Michigan-Ann Arbor</td>
<td>MS, Kinesiology; MA, Sports Administration</td>
</tr>
<tr>
<td>Wayne State University</td>
<td>MA, Sports Administration; M.Ed., Exercise and Sport Science; M.Ed., Physical Education Pedagogy</td>
</tr>
<tr>
<td>Western Michigan University</td>
<td>MS, Exercise and Sports Medicine; MS, Athletic Training; MA, Sports Administration; MA, Coaching Sport Performance; MA, Physical Education</td>
</tr>
</tbody>
</table>

4. PROJECTED ENROLLMENT

Our goal is to have a total of 5-10 coursework (Plan D) MS students per year. We anticipate the majority of those Plan D students being 5th year MS students, thus completing within one year. Regarding the thesis-based (Plan A) MS degree, we estimate 1 MS student for every tenure/tenure-track faculty. We currently have 4 faculty and 2 ongoing searches, so in steady-state we expect approximately 6 Plan A MS students. Therefore, in total we expect somewhere between 11-16 MS students in this program.

5. SCHEDULING PLANS

We intend to offer the proposed curriculum using a regular scheduling plan consistent with University policy.
6. CURRICULUM DESIGN
Graduate students in the Kinesiology MS program may enter from a variety of backgrounds such as kinesiology, physiology, biological sciences, or relevant disciplines. Faculty from the graduate program must approve the admission of graduate student applicants. Admission will be based on holistic review of the students application package as well as the availability of space in the program.

6.1. Degree Requirements for Coursework Option (Plan D)
Students will be required to take 30 course credits, with the following requirements:

Required Core Courses (20-21 credits)
- EH 5310: Advanced Exercise Physiology (3 credits)
- EH 5320: Advanced Biomechanics (3 credits)
- EH 5330: Advanced Motor Behavior (3 credits)
- EH 5950: Graduate Kinesiology Internship (6 credits)
- EH 5920: Graduate Seminar (1 credit)*
  * A minimum of 2 graduate seminar credits are required.
- At least one of the following statistical courses:
  - BE 5550: Biostatistics for Health Science Research (4 credits)
  - MA 4710: Regression Analysis (3 credits)
  - MA 4720: Design and Analysis of Experiments (3 credits)
  - MA 5701: Statistical Methods (3 credits)
  - PSY 5210: Advanced Statistical Analysis and Design I (4 credits)
  - PSY 5220: Advanced Statistical Analysis and Design II (4 credits)

Elective Courses
- A minimum of 10 elective course credits approved by graduate program director or department chair. A list of approved elective courses within and outside the department is provided in Section 4.3, and this list will be updated annually by the department. Courses not on this list, but deemed relevant and appropriate by the student and advisor, can be used ad hoc if written approval is obtained from the graduate program director or KIP department chair.

These degree requirements are consistent with University policy related to the distribution of credits for the Plan D option (i.e., minimum of 18 credits at 5000-6000 level, maximum of 12 credits at 3000-4000 level).

6.2. Degree Requirements for Thesis Option (Plan A)
Students will be required to take 30 credits, with the following requirements:

Required Core Courses (8-9 credits)
- EH 5920: Graduate Seminar (1 credit)*
  * A minimum of 2 graduate seminar credits are required.
- At least one of the following:
  - EH 5310: Advanced Exercise Physiology (3 credits)
  - EH 5320: Advanced Biomechanics (3 credits)
  - EH 5330: Advanced Motor Behavior (3 credits)
- At least one of the following statistical courses:
  - BE 5550: Biostatistics for Health Science Research (4 credits)
  - MA 4710: Regression Analysis (3 credits)
Elective Courses
- A minimum of 12 elective course credits approved by graduate program director or department chair. Multiple statistical courses are strongly recommended. A list of approved elective courses within and outside the department is provided in Section 4.3, and this list will be updated annually by the department. Courses not on this list, but deemed relevant and appropriate by the student and advisor, can be used ad hoc if written approval is obtained from the graduate program director or KIP department chair.

Research Credits
- A minimum of 6 research credits are required. Students are strongly encouraged to present (oral presentation or poster) at a national or international conference prior to thesis defense.

These degree requirements are consistent with University policy related to the distribution of credits for the Plan A option (i.e., 6-10 research credits, minimum of 20 coursework credits of which the distribution must include a minimum of 12 credits at 5000-6000 level and maximum of 12 credits at 3000-4000 level).

Additional details for the thesis option:

6.2.1. Advisor and the advisory committee
Based on their research interests, graduate students should choose a primary (or co-advisors), no later than the end of the first academic year. The program will adhere to the graduate school policy for advisor and advisory committee. The advisory committee must be approved by the graduate program director or KIP department chair.

6.2.2. Thesis proposal
The thesis proposal should contain a review of the literature, a problem statement/rationale, study hypotheses, research design, proposed methods/research strategy, and pilot data when possible. The primary advisor, with input from the committee members, can decide on the proposal format. This thesis proposal should be reviewed and approved by the advisory committee.

6.2.3. Written thesis
The thesis will be written and prepared under the supervision of the primary advisor and the advisory committee according to the requirements of the Graduate School.

6.2.4. Final oral examination
The final requirement will be a public oral presentation of the thesis and an oral examination in accordance with the requirements of the Graduate School.

6.3. Course Offerings

6.3.1. Existing graduate courses
The following is a list of existing courses (in various departments) that demonstrates the breadth of courses currently available to students. We have sought input and obtained approval to include the non-departmental courses via the respective department chairs (i.e. BE, BL, MA, and PSY).

**BE 5550 - Biostatistics for Health Science Research**
An overview course of biostatistical methods used in the health sciences. Topics include a review of undergraduate statistical concepts, NIH, CDC, and FDA guidelines for clinical trial research, proper use of biostatistical methods including ANOVA models, logistic regression, risk analysis, survivorship analysis and any other statistical methods that are common in the enrolled students' discipline. Credits: variable to 4.0

**BL 4010 - Biochemistry I**
Structure, biochemical properties, and function of important biomolecules such as proteins and nucleic acids. Introduces enzyme biochemistry (structure, function, catalysis, kinetics, and inhibition). Credits: 3.0

**BL 4020 - Biochemistry II**
Dynamic aspects of living systems. Broad exposure to cellular metabolic pathways, intermediary metabolism and its regulation and bioenergetics. Credits: 3.0

**BL 4380 - Cardiopulmonary Physiology**
Using a problem-based learning approach, course examines the physiology of the human body. In-class case-study analyses provide in-depth learning about the cardiovascular and pulmonary systems and their relationship with other organ systems. Promotes development of problem-solving skills. Credits: 3.0

**BL 5350 - Special Topics in Physiology**
A discussion of recent developments in physiology. Recent offerings have included respiratory physiology, renal physiology, clinical cardiology, and neurophysiology. Credits: variable to 10.0; Repeatable to a Max of 10

**EH 4200 - Sports Nutrition Seminar**
Human nutrition as it specifically applies to athletes. Specific needs for proteins, carbohydrates, fats, electrolytes and micronutrients. Use of ergogenic aids is covered. Students will research, write and present orally their findings on nutrition topics. Credits: 2.0

**EH 4210 - Exercise Physiology**
Focuses on the functional changes brought by acute and chronic exercise sessions. Topics include muscle structure and function, bioenergetics, cardiovascular and respiratory adaptations, exercise training for sport, sport nutrition, ergogenic aids, and other health and fitness topics. Credits: 2.0

**EH 4211 - Exercise Physiology Laboratory**
A companion course to EH4210. Hands-on experience in making physiological measurements as related to exercise. Cardiovascular and respiratory changes during exercise will be monitored. A virtual lab is used to simulate changes in physiological measurements that cannot be performed on live subjects. A student designed laboratory project is required. Credits: 1.0
EH 4220 – EKG Interpretation  
Course is designed for students who are going to pursue future career related to cardiac rehabilitation, physical therapy and students in the Pre-Med program. Students will learn cardiac electrophsiology, the pasthophysiology, the diagnosis, and treatment of cardiac arrhythmias, and related cardiovascular diseases. Class will build bridge between basic sciences and human health. Credits: 2.0

EH 4400 - Motor Learning and Control  
Designed for upper level undergraduates or graduates, this course will provide the current theories and concepts involved in the processes of motor skill acquisition and performance from a behavioral perspective. Credits: 3.0

EH 4420 - Motor Development  
Designed for upper level undergraduates or graduates, this course will focus on the changes in motor behavior across a life span, and examine the study and practice of fundamental patterns within the context of development theory. Credits: 3.0

EH 4500 - Biomechanics of Human Movement  
An in-depth view of the biomechanical properties of the musculoskeletal system. The course provides detailed analyses of the kinetics of human movement, material properties of the component tissues, and dynamic processes of adaptation to stress and strain of the system. Credits: 3.0

EH 4600 – Sports and Fitness Promotions  
Development and implementation of marketing plans for sports and fitness businesses. Topics include marketing of sporting events and fitness programs, use of traditional media for promotion, web-based advertising (new media), and business branding. Credits: 3.0

EH 4620 – Legal Issues in Sport and Fitness Management  
Review of legal issues that apply to sport and fitness organizations such as liability, risk management, facility concerns, and labor laws. Basic components of the U.S. legal system and guidelines, and rules of the National Collegiate Athletic Association will be covered. Credits: 3.0

EH 5350 - Special Topics in Kinesiology  
Selected additional topics in kinesiology for advanced students based on interests of faculty and students. Interested students should contact the Exercise Science, Health and Physical Education department. Credits: variable to 9.0; Repeatable to a Max of 9

MA 4710 – Regression Analysis  
Covers simple, multiple, and polynomial regression; estimation, testing, and prediction; weighted least squares, matrix approach, dummy variables, multicollinearity, model diagnostics and variable selection. A statistical computing package is an integral part of the course. Credits: 3.0

MA 4720 – Design and Analysis of Experiments  
Covers construction and analysis of completely randomized, randomized block, incomplete block, Latin squares, factorial, fractional factorial, nested and split-plot designs. Also examines fixed, random and mixed effects models and multiple comparisons and contrasts. The SAS statistical package is an integral part of the course.
MA 5701 - Statistical Methods
Introduction to design, conduct, and analysis of statistical studies, with an introduction to statistical computing and preparation of statistical reports. Topics include design, descriptive, and graphical methods, probability models, parameter estimation and hypothesis testing. Credits: 3.0

PSY 5010 - Cognitive Psychology
A systematic survey of classical and contemporary research topics in human information processing and learning. Topics include models of cognition, perception/pattern recognition, attention, the nature of mental representation and processing; the architecture of memory, imagery, concepts, and prototypes; reasoning, decision making, problem solving, and cognitive development. Credits: 3.0

PSY 5210 - Advanced Statistical Analysis and Design I
An overview of research ethics, experimental design, proposal writing, and univariate statistics such as t-tests and ANOVA. Credits: 4.0

PSY 5220 - Advanced Statistical Analysis and Design II
A continuation of PSY 5210 covering multivariate and nonparametric statistics such as MANOVA, ANCOVA, Multiple Regression, factor analysis, and Chi Square. Credits: 4.0

PSY 5850 - Human Factors Psychology
Advanced concepts critical to the design of human-technological systems, such as capitalizing upon human capabilities and compensating for human limitations. Topics may include perceptual and motor abilities, human error and cognitive engineering. Credits: 3.0

PSY 6991 - Special Topics in Human Factors
Study of special topics in human factors as designed by section title. Credits: variable to 3.0; Repeatable to a Max of 9

6.3.2. New graduate courses
The Department of Kinesiology and Integrative Physiology will offer the following new graduate courses for this program. With the addition of the proposed Professor of Practice (see section 7 below), and the two ongoing tenure-track faculty searches, we have the expertise and sufficient number of faculty/staff to deliver this curriculum. Course proposals for the internal Michigan Tech Curriculum Binder Process are included in Appendix A. New courses will be phased in, and some courses are offered every other year (or on demand), to ensure faculty workload is appropriate.

New core courses for both options (thesis and coursework):
   EH 5920: Graduate Seminar (1 credit; need to take at least twice)

New core courses for coursework option:
   EH 5310: Advanced Exercise Physiology (3 credits)
   EH 5320: Advanced Biomechanics (3 credits)
   EH 5330: Advanced Motor Behavior (3 credits)
   EH 5950: Graduate Internship in Kinesiology (6 credits)

New core course for thesis option:
   EH 5990: Master’s Thesis in Kinesiology (variable – 9 credits)

New elective courses:
EH 4710: Stress Physiology (2 credits)
EH 4720: Sleep and Circadian Physiology (3 credits)
EH 4730: Neuroendocrine Physiology (3 credits)
EH 4760: Computational Biomechanics (3 credits)
EH 4770: Specificity of Exercise Assessment and Prescription (3 credits)
EH 5500: Advanced Sport Psychology (3 credits)
EH 5510: Advanced Strength and Conditioning (3 credits)
EH 5900: Laboratory Techniques in Integrative Physiology (2 credits)

7. NEW COURSE DESCRIPTIONS

EH 4710 Stress Physiology
This course focuses on stress physiology in humans. Topics include neural and hormonal responses to mental stress, interactions between physical and mental stress, bidirectional relations between stress and disease, and health disparities associated with stress. Credits: 2.0

EH 4720 Sleep and Circadian Physiology
This course focuses on the role of sleep and circadian rhythm on physiological control systems. Topics include basic mechanisms of the sleep-wake cycle, role of sleep and circadian clock on cardiovascular and respiratory control, overview and treatment strategies for common sleep disorders, and techniques in sleep medicine research. Course content will be delivered using a combination of lecture, seminar, scientific articles, and group work. Credits: 3.0

EH 4730 Neuroendocrine Physiology
This course will focus on understanding how the neural and the endocrine system are regulated under both normal physiological conditions and pathophysiological states. The major objective of this course is to prepare graduate students to develop critical thinking and problem solving skills related to the function of the nervous system and endocrine system, and their complex interaction with each other. This will be done through a combination of lecture, seminar, scientific articles, lab techniques, and group work. Credits: 3.0

EH 4760 Computational Biomechanics
Computational Biomechanics provides an introduction to the application of computer simulation to solve some fundamental problems in biomechanics and bioengineering. Musculoskeletal mechanics, joint mechanics, and inter-subject variability will be considered. An emphasis will be placed on understanding the limitations of the computer model as a predictive tool and the need for rigorous verification and validation of computational techniques. Credits: 3.0

EH 4770 Specificity of Exercise Assessment and Prescription
Peer-reviewed literature will be utilized to understand the sport-specific needs of athletes in regard to how they are tested and trained. Students will be expected to design a year-round training program for a particular sport that includes at least 3 testing sessions to evaluate the athlete. Laboratory sessions will cover measurement techniques such as expired air analysis, blood lactate assessment, and surface electromyography. Credits: 3.0

EH 5310: Advanced Exercise Physiology
This course focuses on exercise physiology in both humans and rodents. Topics include detailed muscle physiology, fatigue mechanisms, the autonomic nervous system, advanced cardiovascular adaptations with exercise, exercise metabolism, and environmental exercise physiology. The importance of translational research will be highlighted. Credits: 3.0

**EH 5320: Advanced Biomechanics**
This course includes the quantitative analysis of human motion through bioinstrumentation during dynamic performance. A detailed analysis of different movements and movement techniques, from both a clinical and exercise science perspective, as well as investigations into the mechanics of tissues and their function, are integral features of this course. Students will also learn how to interpret the data recorded by biomechanical equipment, and how to apply this to the body of knowledge in sport science. Credits: 3.0

**EH 5330: Advanced Motor Behavior**
Peer-reviewed literature will be utilized to acquaint students with scholarly issues and topics in motor learning and control that are relevant to their fields. The theoretical concepts related to motor control, motor learning, and motor development will be covered. Students will be expected to design a scientific research study related to their specific interest goals. Credits: 3.0

**EH 5500 Advanced Sports Psychology**
This course is designed to educate students for roles dealing with ethical performance enhancement in sport and exercise. Upon completion of the course, students will understand the importance of theoretical foundations for improving performance, research and evaluation, developing relationships, individual and group skills, normal and abnormal behavior, and the various psychological factors that affect performance in sport and exercise. This course provides students an opportunity to develop a foundation in applied sport psychology and a knowledge base in the physiological, motor, and psychosocial aspects of sport behavior. Credits: 3.0

**EH 5510 Advanced Strength and Conditioning**
Advanced theory and practice in development and administration of comprehensive strength and conditioning programs for both the athlete and individual of any level. Includes knowledge, safety concerns and skill techniques necessary for teaching and administering any strength and conditioning facility. This will be done through a combination of lecture, seminar, scientific articles and practical experience. Credits: 3.0

**EH 5900 Laboratory Techniques for Integrative Physiology**
This course will expose graduate students to various methodologies in integrative physiology. Student will rotate between various laboratories and observe techniques such as microneurography, electrophysiology, molecular physiology, muscular fatigue, etc.; both human and animal methodologies will be examined. Credits: 2.0

**EH 5920 Graduate Seminar**
Graduate seminars are designed to facilitate critical discussions of student research projects and peer-reviewed research in related fields. The presenter will provide an overview or seminar of the research of interest, which will establish the foundation for the discussion thereafter. Credits: 1.0

**EH 5950 Master’s Internship in Kinesiology**
Practical experience in the field of kinesiology at an approved internship site. Provides experience in a variety of exercise science or medical settings. Internships must be approved by the department chair or graduate director, and work a minimum of 50 hours for each credit earned. Credits: 6.0

EH 5990  Master’s Research in Kinesiology
An original research investigation in kinesiology that culminates in a thesis. Credits: variable up to 9.0 per semester.

8. LIBRARY AND OTHER LEARNING RESOURCES
The existing library and learning resources are adequate for the proposed graduate degree; no new resources are requested.

9. COMPUTING ACCESS FEE
No applicable fee

10. CORE AND AFFILIATED FACULTY (RESUMES)
The KIP department has four tenure/tenure-track faculty, two ongoing tenure-track faculty searches, and several key adjunct faculty that will assist with the proposed degree. The curricula vitae of these faculty members are available at the following website:

http://www.mtu.edu/kip/graduate/masters

10.1. Core KIP Faculty

Jason R. Carter, Ph.D.
Associate Professor and Chair

Qing-Hui Chen, M.D. & Ph.D.
Assistant Professor

Zhiying (Jenny) Shan, Ph.D.
Assistant Professor

Tejin Yoon, Ph.D.
Assistant Professor

TBD, Ph.D. (Search In Progress)
Assistant/Associate Professor

TBD, Ph.D. (Search In Progress)
Assistant Professor

Mary Ann Klooster, M.A.
Senior Lecturer

Amber Leonard, M.S.
Instructor and Advisor

Craig Pellizzaro, M.S.
Instructor and Intramural Director

Matt Thome, M.S.
Instructor and Head Strength and Condition Coach

Kate Hagenbuch, M.S.
Instructor and Director for NCAA Compliance and Student Services

Joseph Haggenmiller, J.D.
Instructor and Coach

10.2. Adjunct Faculty

Michael D. Brothers, Ph.D.
Professor and Chair, Department of Aerospace Studies

John J. Durocher, Ph.D.
Assistant Professor, Department of Biological Sciences

L. Syd Johnson, Ph.D.
Assistant Professor, Department of Humanities

Mark Randell, PT, DPT, MTC, FAAOMPT
Director of Portage Health Sports Medicine Institute

Carl Smoot, D.O.
Director of the Portage Health Sleep Disorders Center

Cameron Williams, PT, DPT, MS
PTA Program Director and Professor, Finlandia University

11. DESCRIPTION OF AVAILABLE/NEEDED EQUIPMENT

The KIP department currently has all of the necessary equipment for the proposed program. The department includes six designated research and/or teaching laboratories related to exercise physiology, biomechanics, and motor behavior. Some relevant pieces of equipment available for this program include:

- microneurography nerve traffic analysis system
- electrocardiogram units and amplifiers
- electrophysiology equipment for patch-clamp studies
- pneumobelt for respiratory excursions
- venous occlusion plethysmography for limb blood flow measurements (calf and forearm)
- automated sphygmomanometer – four units
- finger plethysmography (i.e., Finometer) for beat-to-beat blood pressure recordings
- 24 hour ambulatory blood pressure monitoring system -- four units
- limb actigraphy system -- eight units
- motorized tilt table
- lower body negative pressure chamber
- three cycle ergometers, including a Wingate bike
- portable metabolic cart (i.e., Oxycon Mobile) for aerobic capacity testing with all accompanying accessories
- stationary metabolic cart (i.e., Oxycon Mobile) for aerobic capacity testing with all accompanying accessories
- phlebotomy chair and all equipment/accessories needed for venipuncture
- six Vicon motion-capture cameras
- in-ground force plate in biomechanics laboratory with motion-capture cameras
- blood lactate analyzers -- two units
- multi-use Biopac systems for EMG, EEG, ECG, etc.
- fat calipers, underwater body weighing, and other body composition equipment
- Biodex machine for isokinetic testing

Additionally, the KIP department also has shared oversight of departmental exercise training equipment within the Student Development Complex. Specifically, students will have access to the 7,256 ft² student exercise training complex for aerobic and resistance training (i.e., strength and conditioning curriculum). Equipment available in this training complex include:

- **Aerobic equipment**: 12 stationary bicycles, 14 treadmills, 6 elliptical machines, 3 stairmaster machines, 3 rowing ergometers
- **Resistance equipment (free weight)**: 2 full sets of 100 lb (5 lb increment) dumbbells, barbells (10-110 lbs), 5 free weight bench press units (1 incline and 1 decline), 3 squat racks, 1 military press, 3 dual cable crossover units
- **Resistance equipment (free motion and hammer strength machines)** for: bicep, tricep, deltoid, pectoralis, latissimus dorsi, rhomboids, hamstring, quadricep, gastrocnemius, soleus, and abdominal muscles

There is sufficient equipment and space currently available for the proposed graduate degree, and no new resources are requested for equipment. The department expects to continue making strategic investments of available internal (i.e., department general fund, laboratory fees, summer teaching return, etc.) and external (i.e., external research grants) resources to build upon the existing infrastructure.

### 12. ESTIMATED PROGRAM COSTS

Three-year costs will be $155,194, with projected tuition revenue of $288,542 during the same period. Each year thereafter we project a surplus of tuition revenue over costs of approximately $100,000. The major expense to the University will be support for a Professor of Practice who will help coordinate the MS course-work option and serve as a key instructor. We acknowledge additional hidden cost in offering this additional program, but the surplus of tuition revenue over costs should be more than sufficient to cover such costs. The Professor of Practice will be expected to help with graduate student recruitment, advising, and internship coordination (~25% effort), and teach courses (~75% effort). Potential courses might include Specificity of Exercise Assessment and Prescription, Advanced Strength and Conditioning, Advanced Sports Psychology, or other courses of appropriate expertise. No additional faculty needs are anticipated.

Based on the projected enrollment of a gradual increase to 3rd year steady state enrollments of 4 MS thesis option students and 6 MS coursework option students, we estimate costs and revenue for this new program in Table 1 below. Professor of Practice salary is $55,000 plus the current 39% fringe rate, with an estimated 3% annual increase. Tuition is based on estimated rates as posted on the sponsored programs website.

**Table 2. Program Cost Analysis**
<table>
<thead>
<tr>
<th></th>
<th>2014-15</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
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<tbody>
<tr>
<td><strong>Professor of Practice</strong></td>
<td>--------</td>
<td>$76,450</td>
<td>$78,744</td>
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<tr>
<td>(salary and fringe)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total # of M.S. students</strong></td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>(thesis option)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total # of M.S. students</strong></td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>(coursework option)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tuition per credit</strong></td>
<td>$820</td>
<td>$852</td>
<td>$886</td>
</tr>
<tr>
<td><strong>Tuition revenue based</strong></td>
<td>$29,520</td>
<td>$46,008</td>
<td>$63,792</td>
</tr>
<tr>
<td>on 9 credits per semester for</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>thesis option students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tuition revenue based</strong></td>
<td>$59,040</td>
<td>$122,688</td>
<td>$122,688</td>
</tr>
<tr>
<td>on 12 credits per semester for</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>coursework option students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Income developed from</strong></td>
<td>$88,560</td>
<td>$92,246</td>
<td>$107,736</td>
</tr>
<tr>
<td>program</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Note that revenue may be greater than shown in the table as some of the coursework option students may come from other schools and not qualify for the senior rule (i.e., will need more than 2 semesters of 12 credits).

We recognize additional resources required for student recruitment and other administrative duties, but these will be handled by existing departmental budgets.

Appendix B includes additional budgetary information per University Senate policy 51-04.

**13. SPACE**

There are no new requests for additional space related to this program.

**14. POLICIES, REGULATIONS, AND RULES**

All policies, regulations, and rules have been previously outlined, and are superseded by University policy (including Graduate School policies).

**15. ACCREDITATION REQUIREMENTS**

There are no specific accreditation requirements.

**16. INTERNAL STATUS OF THE PROPOSAL**

This proposal has been preliminarily reviewed and modified in consultation with the KIP department faculty, KIP chair, Dean of the College of Sciences and Arts, Dean of the Graduate School, College of Sciences and Arts College Council, and Deans Council. We are now seeking review and feedback from the Graduate Faculty Council and University Senate.
17. PLANNED IMPLEMENTATION DATE
We aim to have this degree available in Fall 2014.

Introduced to Senate:
Adopted by Senate:
Approved by Administration:
Approved by Board of Control:
1) Course Information

Is this a half-semester course proposal?  ☑ Yes  ☐ No

NOTE: All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details: http://www.sas.lt.mtu.edu/ senate/proposal/03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110): EH4710

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)

Stress Physiology

Alternative Title for Catalog (Up to 100 characters including spaces)

Stress Physiology

2) Credits

Number of credits assigned to this course  2

OR

Range of credits if variable ☐ to ☐ (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (Lec & Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1-3 contact hours. i.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

Lecture 0

Recitation 1

Lab 1

OR

Research Course?  ☐ Yes  ☑ No

OR

Special Topics Course?  ☑ Yes  ☐ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?

☑ No

☐ Yes, for a maximum of _____ credits.  (Must be a multiple of the course credits, i.e. Research or Special Topics)

☐ Yes, for an unlimited number of credits.  (i.e. Music, Varsity sports, etc.)
5) Pass/Fail
Will this course be offered as a pass/fail option ONLY? (grade of S or E) □ Yes ☑ No

6) Cross Listed/Equivalent Course
Cross Listed: Is there an identical course offered in a different subject or at a different level? □ Yes ☑ No
If Yes, what is the other subject and course number? ________________
Equivalent Course: Does this course replace a dropped course with no change in course content for degree
requirements, prerequisites, and repeating purposes? □ Yes ☑ No
If Yes, what is the subject and course number of the dropped course? ________________

7) Corequisites and Prerequisites
Corequisites are courses that are REQUIRED to be taken at the SAME TIME as this course (courses MUST
be offered during the same term):

Required corequisite course(s):
N/A
__________________________________________________________

Prerequisites are courses that are REQUIRED to be taken PRIOR to enrollment in this course.
Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):
1 BL2020
☑ And □ or ☐ Or 2 BL2021
□ And □ or □ Or 3
□ And □ or □ Or 4
□ And □ or □ Or 5
□ And □ or □ Or 6

A concurrent prerequisite is a defined prerequisite course (from list above) that MAY be taken EITHER
simultaneously in the same semester OR in a prior semester. Indicate below applicable courses.

Concurrent prerequisite course(s):
N/A
__________________________________________________________
8) Catalog Course Description
The traditional catalog style description for this course, **up to 40 words**. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. 
Please refer to the guidebook for examples and suggestions on developing a course description.

| This course focuses on stress physiology in humans. Topics include neural and hormonal responses to mental stress, interactions between physical and mental stress, bidirectional relations between stress and disease, and health disparities associated with stress. |

9) Registration Restrictions
- If permission is **always required** for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

- Department  OR  Instructor

- Students who register for this course may be restricted by their **College/School OR their Major**. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

- **No College/School Restrictions**

  Colleges/Schools who MAY **NOT** enroll (EXCLUDE)
  
  
  -OR-

  Colleges/Schools who MAY enroll (INCLUDE)
  

- **No Major Restrictions**

  Majors that MAY **NOT** enroll (EXCLUDE)
  
  -OR-

  Majors that MAY enroll (INCLUDE)
  

-- Restrictions continued on next page --
• A restriction may also be placed on **Class Standing** (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

- No Class Restrictions

<table>
<thead>
<tr>
<th>Class of students who MAY NOT enroll (EXCLUDE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR, SO</td>
</tr>
<tr>
<td>-OR-</td>
</tr>
<tr>
<td>Class of students who MAY enroll (INCLUDE)</td>
</tr>
</tbody>
</table>

10) **Semester(s) Offered**

- Fall  
- Spring  
- Summer  *(Check all that apply)*

**OR**

- ☑ On Demand

If offered in a specific semester, will the course be offered only in alternate years?  
- Yes  
- No

If yes, what will be the starting academic year? *(i.e. 2008-09 or 2009-10)*

11) **General Education HASS Distribution**

To propose this course for inclusion on a **HASS Distribution List** (HASS, HASS Creative Endeavors, or HASS Supplemental) please complete the **New Distribution List Proposal** form in your department's binder.

12) **Co-Curricular**

To propose this course for inclusion on the **Co-Curricular List** please complete the **New Co-Curricular List Proposal** form in your department's binder.

13) **Course Computing Lab and Expendables Fees**

**DO NOT RECORD FEE INFORMATION HERE.** Submit course fee information on the **Course Computing Lab and Expendables Fees for New Courses** form included in your department's binder at the end of the fee section.
14) Degree Programs which this course will affect
List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

Degree Program(s):
Proposed MS and PhD programs in the KIP Dept.


*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department’s binder.

---

15) Course Rationale (Required)
This course is part of the graduate programs being proposed by the KIP Department.

---

16) Faculty Contact
Faculty proposing this course (please print): Name Jason R. Carter

Email jcarter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
1) Course Information

Is this a half-semester course proposal? ☐ Yes ☑ No

NOTE: All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details: http://www.sas.mtu.edu/usenate/proposal/03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110): EH4720

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)
Sleep and Circadian Physiology

Alternative Title for Catalog (Up to 100 characters including spaces)
Sleep and Circadian Physiology

2) Credits

Number of credits assigned to this course 3

OR

Range of credits if variable ☐ to ☐ (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (Lec & Rec: 1 credit =1 contact hour; Lab: 1 credit =1-3 contact hours. i.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

☐ 2 Lecture ☐ 1 Recitation ☐ 0 Lab

OR

Research Course? ☐ Yes ☑ No

OR

Special Topics Course? ☐ Yes ☑ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?

☑ No

☐ Yes, for a maximum of ______ credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

☐ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail
Will this course be offered as a pass/fail option ONLY? (grade of S or E) □ Yes  ☑ No

6) Cross Listed/Equivalent Course
Cross Listed: Is there an identical course offered in a different subject or at a different level? □ Yes  ☑ No
If Yes, what is the other subject and course number? ______________________________
Equivalent Course: Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes? □ Yes  ☑ No
If Yes, what is the subject and course number of the dropped course? ______________________________

7) Corequisites and Prerequisites
Corequisites are courses that are REQUIRED to be taken at the SAME TIME as this course (courses MUST be offered during the same term):

Required corequisite course(s):
N/A

Prerequisites are courses that are REQUIRED to be taken PRIOR to enrollment in this course. Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):
1 BL2020
☑ And  or  ☐ Or 2 BL2021
☐ And  or  ☐ Or 3
☐ And  or  ☐ Or 4
☐ And  or  ☐ Or 5
☐ And  or  ☐ Or 6

A concurrent prerequisite is a defined prerequisite course (from list above) that MAY be taken EITHER simultaneously in the same semester OR in a prior semester. Indicate below applicable courses.

Concurrent prerequisite course(s):
N/A
8) Catalog Course Description

The traditional catalog style description for this course, **up to 40 words**. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. **Please refer to the guidebook for examples and suggestions on developing a course description.**

This course focuses on the role of sleep and circadian rhythm on physiological control systems. Topics include basic mechanisms of the sleep-wake cycle, role of sleep and circadian clock on cardiovascular and respiratory control, overview and treatment strategies for common sleep disorders, and techniques in sleep medicine research. Course content will be delivered using a combination of lecture, seminar, scientific articles, and group work.

9) Registration Restrictions

- If permission is **always required** for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

  Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

  □ Department  OR  □ Instructor

- Students who register for this course may be restricted by their **College/School OR their Major**. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

  [✓] No College/School Restrictions

  Colleges/Schools who MAY NOT enroll (EXCLUDE)

  ______________________________________

  -OR-

  Colleges/Schools who MAY enroll (INCLUDE)

  ______________________________________

  [✓] No Major Restrictions

  Majors that MAY NOT enroll (EXCLUDE)

  ______________________________________

  -OR-

  Majors that MAY enroll (INCLUDE)

  ______________________________________

-- Restrictions continued on next page --
• A restriction may also be placed on Class Standing (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☐ No Class Restrictions

Class of students who MAY NOT enroll (EXCLUDE)

FR, SO

-OR-

Class of students who MAY enroll (INCLUDE)

10) Semester(s) Offered  
☐ Fall   ☐ Spring   ☐ Summer  (Check all that apply)

OR  ☑ On Demand

If offered in a specific semester, will the course be offered only in alternate years?  ☐ Yes ☐ No

If yes, what will be the starting academic year?  (i.e. 2008-09 or 2009-10)

11) General Education HASS Distribution

To propose this course for inclusion on a HASS Distribution List (HASS, HASS Creative Endeavors, or HASS Supplemental) please complete the New Distribution List Proposal form in your department's binder.

12) Co-Curricular

To propose this course for inclusion on the Co-Curricular List please complete the New Co-Curricular List Proposal form in your department's binder.

13) Course Computing Lab and Expendables Fees

DO NOT RECORD FEE INFORMATION HERE. Submit course fee information on the Course Computing Lab and Expendables Fees for New Courses form included in your department's binder at the end of the fee section.
14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

<table>
<thead>
<tr>
<th>Degree Program(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed MS and PhD programs in the KIP Dept.</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department’s binder.

15) Course Rationale (Required)

Course is part of the graduate programs being proposed by the KIP Dept.

16) Faculty Contact

Faculty proposing this course (please print): Name Jason R. Carter

Email jcarter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
1) Course Information

Is this a half-semester course proposal? ☑ Yes ☐ No

NOTE: All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details: http://www.sas.illinois.edu/use/propose/03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110): EH4730

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)

Neuroendocrine Physiology

Alternative Title for Catalog (Up to 100 characters including spaces)

Neuroendocrine Physiology

2) Credits

Number of credits assigned to this course 3

OR

Range of credits if variable ☐ to ☐ (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (Lec & Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1-3 contact hours. i.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

☐ 2 Lecture ☐ 1 Recitation ☐ 0 Lab

OR

Research Course? ☐ Yes ☑ No

OR

Special Topics Course? ☐ Yes ☑ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once? ☑ No

☐ Yes, for a maximum of _______ credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

☐ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail

Will this course be offered as a **pass/fail option ONLY?** *(grade of S or E)*
☐ Yes  ☑ No

6) Cross Listed/Equivalent Course

**Cross Listed:** Is there an identical course offered in a different subject or at a different level?
☐ Yes  ☑ No

If Yes, what is the other subject and course number? __________________________

**Equivalent Course:** Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes?
☐ Yes  ☑ No

If Yes, what is the subject and course number of the dropped course? __________________________

7) Corequisites and Prerequisites

**Corequisites** are courses that are **REQUIRED to be taken at the SAME TIME** as this course (courses MUST be offered during the same term):

<table>
<thead>
<tr>
<th>Required corequisite course(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Prerequisites** are courses that are **REQUIRED to be taken PRIOR** to enrollment in this course. Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

<table>
<thead>
<tr>
<th>Required prerequisite course(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 BL2020</td>
</tr>
<tr>
<td>☑ And or ☐ Or 2 BL2021</td>
</tr>
<tr>
<td>☐ And or ☐ Or 3</td>
</tr>
<tr>
<td>☐ And or ☐ Or 4</td>
</tr>
<tr>
<td>☐ And or ☐ Or 5</td>
</tr>
<tr>
<td>☐ And or ☐ Or 6</td>
</tr>
</tbody>
</table>

A **concurrent prerequisite** is a defined prerequisite course (from list above) that **MAY be taken EITHER simultaneously in the same semester OR in a prior semester.** Indicate below applicable courses.

<table>
<thead>
<tr>
<th>Concurrent prerequisite course(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
8) Catalog Course Description
The traditional catalog style description for this course, up to 40 words. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. Please refer to the guidebook for examples and suggestions on developing a course description.

This course will focus on understanding how the neural and the endocrine system are regulated under both normal physiological conditions and pathophysiological states. The major objective of this course is to prepare graduate students to develop critical thinking and problem solving skills related to the function of the nervous system and endocrine system, and their complex interaction with each other. This will be done through a combination of lecture, seminar, scientific articles, lab techniques, and group work.

9) Registration Restrictions
- If permission is always required for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

☐ Department  OR  ☐ Instructor

- Students who register for this course may be restricted by their College/School OR their Major. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☑ No College/School Restrictions

Colleges/Schools who MAY NOT enroll (EXCLUDE)

-OR-

Colleges/Schools who MAY enroll (INCLUDE)

☑ No Major Restrictions

Majors that MAY NOT enroll (EXCLUDE)

-OR-

Majors that MAY enroll (INCLUDE)

-- Restrictions continued on next page --
• A restriction may also be placed on **Class Standing** (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☐ No Class Restrictions

Class of students who **MAY NOT** enroll (EXCLUDE)

FR, SO

-OR-

Class of students who **MAY** enroll (INCLUDE)


---

10) **Semester(s) Offered**

☐ Fall ☐ Spring ☐ Summer **(Check all that apply)**

OR ☑ On Demand

If offered in a specific semester, will the course be offered only in alternate years? ☐ Yes ☐ No

If yes, what will be the starting academic year? (i.e. 2008-09 or 2009-10)

---

11) **General Education HASS Distribution**

To propose this course for inclusion on a **HASS Distribution List** (HASS, HASS Creative Endeavors, or HASS Supplemental) please complete the **New Distribution List Proposal** form in your department's binder.

---

12) **Co-Curricular**

To propose this course for inclusion on the **Co-Curricular List** please complete the **New Co-Curricular List Proposal** form in your department's binder.

---

13) **Course Computing Lab and Expendables Fees**

**DO NOT RECORD FEE INFORMATION HERE.** Submit course fee information on the **Course Computing Lab and Expendables Fees for New Courses** form included in your department's binder at the end of the fee section.
14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

Degree Program(s):
Proposed MS and PhD programs in the KIP Dept.

*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department's binder.

15) Course Rationale (Required)

Course is part of the graduate programs being proposed by the KIP Dept.

16) Faculty Contact

Faculty proposing this course (please print): Name Jason R. Carter

Email jcarter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
1) Course Information

Is this a half-semester course proposal? ☐ Yes ☑ No

NOTE: All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details: http://www.sas.it.mtu.edu/usenate/propos03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110): EH4760

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)
Computational Biomechanics

Alternative Title for Catalog (Up to 100 characters including spaces)
Computational Biomechanics

2) Credits

Number of credits assigned to this course 3

OR

Range of credits if variable ☐ to ☐ (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (Lec & Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1-3 contact hours. i.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

2 1 0

Lecture Recitation Lab

OR

Research Course? ☑ Yes ☐ No

OR

Special Topics Course? ☑ Yes ☐ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?
☑ No

☐ Yes, for a maximum of _______ credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

☐ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail
Will this course be offered as a pass/fail option ONLY? (grade of S or E) □ Yes  ✔ No

6) Cross Listed/Equivalent Course
Cross Listed: Is there an identical course offered in a different subject or at a different level? □ Yes  ✔ No
If Yes, what is the other subject and course number? ______________________
Equivalent Course: Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes? □ Yes  ✔ No
If Yes, what is the subject and course number of the dropped course? ______________________

7) Corequisites and Prerequisites
Corequisites are courses that are REQUIRED to be taken at the SAME TIME as this course (courses MUST be offered during the same term):

Required corequisite course(s):
N/A

Prerequisites are courses that are REQUIRED to be taken PRIOR to enrollment in this course.
Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):
1 EH4500
□ And  or □ Or 2 ______________________
□ And  or □ Or 3 ______________________
□ And  or □ Or 4 ______________________
□ And  or □ Or 5 ______________________
□ And  or □ Or 6 ______________________

A concurrent prerequisite is a defined prerequisite course (from list above) that MAY be taken EITHER simultaneously in the same semester OR in a prior semester. Indicate below applicable courses.

Concurrent prerequisite course(s):
N/A

____________________________________
____________________________________
____________________________________

8) **Catalog Course Description**

The traditional catalog style description for this course, **up to 40 words**, if course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. Please refer to the guidebook for examples and suggestions on developing a course description.

Computational Biomechanics provides an introduction to the application of computer simulation to solve some fundamental problems in biomechanics and bioengineering. Musculoskeletal mechanics, joint mechanics, and inter-subject variability will be considered. An emphasis will be placed on understanding the limitations of the computer model as a predictive tool and the need for rigorous verification and validation of computational techniques.

9) **Registration Restrictions**

- If permission is **always required** for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

  Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

  [ ] Department  **OR**  [ ] Instructor

- Students who register for this course may be restricted by their **College/School OR their Major**. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

  ✔️ No College/School Restrictions
  ✔️ No Major Restrictions

  Colleges/Schools who MAY NOT enroll (EXCLUDE)

  __________________________________________

  -OR-

  Colleges/Schools who MAY enroll (INCLUDE)

  __________________________________________

  Majors that MAY NOT enroll (EXCLUDE)

  __________________________________________

  -OR-

  Majors that MAY enroll (INCLUDE)

  __________________________________________

  -- Restrictions continued on next page --
• A restriction may also be placed on **Class Standing** (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

✔ No Class Restrictions

<table>
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</thead>
<tbody>
<tr>
<td></td>
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<table>
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<th>Class of students who MAY enroll (INCLUDE)</th>
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<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

10) **Semester(s) Offered**

- [ ] Fall
- [ ] Spring
- [ ] Summer *(Check all that apply)*

**OR**

✔ On Demand

If offered in a specific semester, will the course be offered only in alternate years?

- [ ] Yes
- [ ] No

If yes, what will be the starting academic year? *(i.e. 2006-07 or 2009-10)*

11) **General Education HASS Distribution**

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*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department's binder.

15) Course Rationale (Required)

Course is part of the graduate programs being proposed by the KIP Dept.

16) Faculty Contact

Faculty proposing this course (please print): Name Jason R. Carter

Email jcarten@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
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1) Course Information

Is this a half-semester course proposal? □ Yes ☑ No

NOTE: All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details:
http://www.sas.it.mtu.edu/usenate/proposes/03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110): EH4770

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)

Specificity of Exercise Assessment & Prescription

Alternative Title for Catalog (Up to 100 characters including spaces)

Specificity of Exercise Assessment & Prescription

2) Credits

Number of credits assigned to this course 3

OR

Range of credits if variable □ to □ (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (Lec & Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1-3 contact hours. i.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

☐ 2 Lecture
☐ 1 Recitation
☐ 0 Lab

OR

Research Course? □ Yes ☑ No

OR

Special Topics Course? □ Yes ☑ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?

☑ No

☑ Yes, for a maximum of _____ credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

☑ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail

Will this course be offered as a **pass/fail option ONLY**? (grade of S or E) □ Yes ☑ No

6) Cross Listed/Equivalent Course

**Cross Listed:** Is there an identical course offered in a different subject or at a different level? □ Yes ☑ No
If Yes, what is the other subject and course number? __________________________

**Equivalent Course:** Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes? □ Yes ☑ No
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7) Corequisites and Prerequisites

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Required corequisite course(s):
N/A

**Prerequisites** are courses that are **REQUIRED to be taken PRIOR** to enrollment in this course.
Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):
1 EH3100
☐ And or ☐ Or 2____________________
☐ And or ☐ Or 3____________________
☐ And or ☐ Or 4____________________
☐ And or ☐ Or 5____________________
☐ And or ☐ Or 6____________________

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Concurrent prerequisite course(s):
N/A

8) Catalog Course Description
The traditional catalog style description for this course, up to 40 words. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. Please refer to the guidebook for examples and suggestions on developing a course description.

Peer-reviewed literature will be utilized to understand the sport-specific needs of athletes in regard to how they are tested and trained. Students will be expected to design a year-round training program for a particular sport that includes at least 3 testing sessions to evaluate the athlete. Laboratory sessions will cover measurement techniques such as expired air analysis, blood lactate assessment, and surface electromyography.

9) Registration Restrictions
- If permission is always required for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

☐ Department  OR  ☐ Instructor

- Students who register for this course may be restricted by their College/School OR their Major. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☑ No College/School Restrictions

Colleges/Schools who MAY NOT enroll (EXCLUDE)

________________________________________

-OR-

Colleges/Schools who MAY enroll (INCLUDE)

________________________________________

☑ No Major Restrictions

Majors that MAY NOT enroll (EXCLUDE)

________________________________________

-OR-

Majors that MAY enroll (INCLUDE)

________________________________________

-- Restrictions continued on next page --
• A restriction may also be placed on **Class Standing** (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☐ No Class Restrictions

| Class of students who MAY NOT enroll (EXCLUDE) |
| FR, SO |

-OR-

| Class of students who MAY enroll (INCLUDE) |

---

10) **Semester(s) Offered**

☐ Fall ☐ Spring ☐ Summer *(Check all that apply)*

OR ☑ On Demand

If offered in a specific semester, will the course be offered only in alternate years? ☐ Yes ☐ No
If yes, what will be the starting academic year? *(i.e. 2008-09 or 2009-10)*

---

11) **General Education HASS Distribution**

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12) **Co-Curricular**

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---

13) **Course Computing Lab and Expendables Fees**

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14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

Degree Program(s):

- Proposed MS program in the KIP Dept.

*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department’s binder.

15) Course Rationale *(Required)*

Course is part of the graduate program being proposed by the KIP Dept.

16) Faculty Contact

Faculty proposing this course *(please print)*: Name Jason R. Carter

Email jcarter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
Course Add Proposal

PLEASE COMPLETE THIS FORM IN RED

A guide for completing this form is located at www.admin.mtu.edu/em/faculty/courses/proposal_guide.php

1) Course Information

Is this a half-semester course proposal? □ Yes ☑ No

NOTE: All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details: http://www.sas.it.mtu.edu/usenate/propose/03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110): EH5310

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)
Advanced Exercise Physiology

Alternative Title for Catalog (Up to 100 characters including spaces)
Advanced Exercise Physiology

2) Credits

Number of credits assigned to this course □ 3

OR
Range of credits if variable □ to □ (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (Lec & Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1-3 contact hours. i.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

Lecture 1 Recitation 0 Lab

OR
Research Course? □ Yes ☑ No

OR
Special Topics Course? □ Yes ☑ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?

☑ No

□ Yes, for a maximum of _____ credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

□ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail
Will this course be offered as a pass/fail option ONLY? (grade of S or E)  ☐ Yes  ☑ No

6) Cross Listed/Equivalent Course
Cross Listed: Is there an identical course offered in a different subject or at a different level?  ☐ Yes  ☑ No
If Yes, what is the other subject and course number? _________________
Equivalent Course: Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes?  ☐ Yes  ☑ No
If Yes, what is the subject and course number of the dropped course? _________________

7) Corequisites and Prerequisites
Corequisites are courses that are REQUIRED to be taken at the SAME TIME as this course (courses MUST be offered during the same term):

Required corequisite course(s):
N/A

Prerequisites are courses that are REQUIRED to be taken PRIOR to enrollment in this course. Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):

☐ And  ☑ Or  1 EH4210

☐ And  ☐ Or  2 EH4211

☐ And  ☐ Or  3

☐ And  ☐ Or  4

☐ And  ☐ Or  5

☐ And  ☐ Or  6

A concurrent prerequisite is a defined prerequisite course (from list above) that MAY be taken EITHER simultaneously in the same semester OR in a prior semester. Indicate below applicable courses.

Concurrent prerequisite course(s):
N/A

________________________________________
8) **Catalog Course Description**

The traditional catalog style description for this course, **up to 40 words**. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. Please refer to the guidebook for examples and suggestions on developing a course description.

This course focuses on exercise physiology in both humans and rodents. Topics include detailed muscle physiology, fatigue mechanisms, the autonomic nervous system, advanced cardiovascular adaptations with exercise, exercise metabolism, and environmental exercise physiology. The importance of translational research will be highlighted.

9) **Registration Restrictions**

- If permission is **always required** for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

  *Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.*

  □ Department OR □ Instructor

- Students who register for this course may be restricted by their **College/School OR their Major**. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

  - [x] No College/School Restrictions
  - [x] No Major Restrictions

  **Colleges/Schools who MAY NOT enroll (EXCLUDE)**

  ___________________________________________

  -OR-

  **Colleges/Schools who MAY enroll (INCLUDE)**

  ___________________________________________

  **Majors that MAY NOT enroll (EXCLUDE)**

  ___________________________________________

  -OR-

  **Majors that MAY enroll (INCLUDE)**

  ___________________________________________

  -- Restrictions continued on next page --
• A restriction may also be placed on Class Standing (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☑ No Class Restrictions

Class of students who MAY NOT enroll (EXCLUDE)

-OR-

Class of students who MAY enroll (INCLUDE)

10) Semester(s) Offered

☐ Fall  ☑ Spring  ☐ Summer  (Check all that apply)

OR  ☐ On Demand

If offered in a specific semester, will the course be offered only in alternate years?  ☑ Yes  ☐ No

If yes, what will be the starting academic year? (i.e. 2008-09 or 2009-10) 2014-2015

11) General Education HASS Distribution

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12) Co-Curricular

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14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

Degree Program(s):
Proposed MS and PhD programs in the KIP Dept.

*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department’s binder.

15) Course Rationale (Required)

Course is part of the graduate programs being proposed by the KIP Dept.

16) Faculty Contact

Faculty proposing this course (please print): Name Jason R. Carter

Email jcarter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
1) Course Information

Is this a half-semester course proposal? ☐ Yes ☑ No

NOTE: All half-semester courses must follow rules set in Senate Proposal 4-00. See Senate website for details: http://www.sas.it.mtu.edu/ senate/proposal/03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110): EH5320

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)
Advanced Biomechanics

Alternative Title for Catalog (Up to 100 characters including spaces)
Advanced Biomechanics

2) Credits

Number of credits assigned to this course __3__

OR

Range of credits if variable ☐ to ☐ (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (Rec & Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1-3 contact hours. I.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

Lecture 2  Recitation 1  Lab 0

OR

Research Course? ☐ Yes ☑ No

OR

Special Topics Course? ☐ Yes ☑ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?

☑ No

☐ Yes, for a maximum of ______ credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

☐ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail

Will this course be offered as a pass/fail option ONLY? (grade of S or E)  ☐ Yes  ☑ No

6) Cross Listed/Equivalent Course

Cross Listed: Is there an identical course offered in a different subject or at a different level?  ☐ Yes  ☑ No

If Yes, what is the other subject and course number? ____________________________

Equivalent Course: Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes?  ☐ Yes  ☑ No

If Yes, what is the subject and course number of the dropped course? ____________________________

7) Corequisites and Prerequisites

Corequisites are courses that are REQUIRED to be taken at the SAME TIME as this course (courses MUST be offered during the same term):

Required corequisite course(s):
N/A

Prerequisites are courses that are REQUIRED to be taken PRIOR to enrollment in this course.
Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):

1 EH4500
☐ And or ☐ Or 2__________________
☐ And or ☐ Or 3__________________
☐ And or ☐ Or 4__________________
☐ And or ☐ Or 5__________________
☐ And or ☐ Or 6__________________

A concurrent prerequisite is a defined prerequisite course (from list above) that MAY be taken EITHER simultaneously in the same semester OR in a prior semester. Indicate below applicable courses.

Concurrent prerequisite course(s):
N/A
8) Catalog Course Description

The traditional catalog style description for this course, up to 40 words. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog.

Please refer to the guidebook for examples and suggestions on developing a course description.

This course includes the quantitative analysis of human motion through bioinstrumentation during dynamic performance. A detailed analysis of different movements and movement techniques, from both a clinical and exercise science perspective, as well as investigations into the mechanics of tissues and their function, are integral features of this course. Students will also learn how to interpret the data recorded by biomechanical equipment, and how to apply this to the body of knowledge in sport science.

9) Registration Restrictions

- If permission is always required for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

☐ Department    OR    ☐ Instructor

- Students who register for this course may be restricted by their College/School OR their Major. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☑ No College/School Restrictions

Colleges/Schools who MAY NOT enroll (EXCLUDE)

______________________________

-OR-

Colleges/Schools who MAY enroll (INCLUDE)

______________________________

☑ No Major Restrictions

Majors that MAY NOT enroll (EXCLUDE)

______________________________

-OR-

Majors that MAY enroll (INCLUDE)

______________________________

-- Restrictions continued on next page --
• A restriction may also be placed on **Class Standing** (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☑ No Class Restrictions

Class of students who MAY NOT enroll (EXCLUDE)

________________________________________
-OR-

Class of students who MAY enroll (INCLUDE)

________________________________________

10) Semester(s) Offered

☑ Fall     ☐ Spring     ☐ Summer  *(Check all that apply)*

OR  ☐ On Demand

If offered in a specific semester, will the course be offered only in alternate years?  ☐ Yes  ☑ No

If yes, what will be the starting academic year? *(i.e. 2008-09 or 2009-10)*

11) General Education HASS Distribution

To propose this course for inclusion on a **HASS Distribution List** (HASS, HASS Creative Endeavors, or HASS Supplemental) please complete the **New Distribution List Proposal** form in your department's binder.

12) Co-Curricular

To propose this course for inclusion on the **Co-Curricular List** please complete the **New Co-Curricular List Proposal** form in your department's binder.

13) Course Computing Lab and Expendables Fees

**DO NOT RECORD FEE INFORMATION HERE.** Submit course fee information on the **Course Computing Lab and Expendables Fees for New Courses** form included in your department's binder at the end of the fee section.
14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

Degree Program(s):

- Proposed MS and PhD programs in the KIP Dept.
- [Additional programs can be listed here]
- [Additional programs can be listed here]
- [Additional programs can be listed here]
- [Additional programs can be listed here]

*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department's binder.

15) Course Rationale (Required)

Course is part of the graduate programs being proposed by the KIP Dept.

16) Faculty Contact

Faculty proposing this course (please print): Name Jason R. Carter

[Signature]

Email jcarte@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?

IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
1) Course Information

Is this a half-semester course proposal? □ Yes ☑ No

**NOTE:** All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details:
http://www.sas.mtu.edu/userenate/proposal/03/10-03.htm

**Course Prefix/Number (i.e. MEEM 2110):** EH5330

**Course Title** (abbreviated; used on transcript - Up to 30 characters including spaces)

Advanced Motor Behavior

**Alternative Title for Catalog** (Up to 100 characters including spaces)

Advanced Motor Behavior

2) Credits

Number of credits assigned to this course _3_

OR

Range of credits if variable □ to □ (Number of credits to be taken in a given semester)

3) Schedule

**Contact Hours per Week** (Lec & Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1-3 contact hours. i.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

□ Lecture □ Recitation □ Lab

OR

Research Course? □ Yes ☑ No

OR

Special Topics Course? □ Yes ☑ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?

☑ No

☐ Yes, for a maximum of ______ credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

☐ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail

Will this course be offered as a **pass/fail option ONLY?** *(grade of S or E)* □ Yes ☑ No

---

6) Cross Listed/Equivalent Course

**Cross Listed:** Is there an identical course offered in a different subject or at a different level? □ Yes ☑ No

If Yes, what is the other subject and course number? ______________________

**Equivalent Course:** Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes? □ Yes ☑ No

If Yes, what is the subject and course number of the dropped course? ______________________

---

7) Corequisites and Prerequisites

**Corequisites** are courses that are **REQUIRED to be taken at the SAME TIME** as this course (courses MUST be offered during the same term):

Required corequisite course(s):
N/A

---

**Prerequisites** are courses that are **REQUIRED to be taken PRIOR** to enrollment in this course.

Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):

1 EH4400
☐ And or ☑ Or 2 EH4420
☐ And or □ Or 3
☐ And or □ Or 4
☐ And or □ Or 5
☐ And or □ Or 6

A **concurrent prerequisite** is a defined prerequisite course (from list above) that **MAY be taken EITHER simultaneously in the same semester OR in a prior semester.** Indicate below applicable courses.

Concurrent prerequisite course(s):
N/A

---
8) Catalog Course Description
The traditional catalog style description for this course, up to 40 words. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. Please refer to the guidebook for examples and suggestions on developing a course description.

Peer-reviewed literature will be utilized to acquaint students with scholarly issues and topics in motor learning and control that are relevant to their fields. The theoretical concepts related to motor control, motor learning, and motor development will be covered. Students will be expected to design a scientific research study related to their specific interest goals.

9) Registration Restrictions
• If permission is always required for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

☐ Department  OR  ☐ Instructor

• Students who register for this course may be restricted by their College/School OR their Major. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☐ No College/School Restrictions

Colleges/Schools who MAY NOT enroll (EXCLUDE)

__________________________

-OR-

Colleges/Schools who MAY enroll (INCLUDE)

__________________________

☐ No Major Restrictions

Majors that MAY NOT enroll (EXCLUDE)

__________________________

-OR-

Majors that MAY enroll (INCLUDE)

__________________________

-- Restrictions continued on next page --
A restriction may also be placed on **Class Standing** (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

- **No Class Restrictions**

---

**Class of students who MAY NOT enroll (EXCLUDE)**

---

- **OR**

**Class of students who MAY enroll (INCLUDE)**

---

10) **Semester(s) Offered**

- **Fall**
- **Spring**
- **Summer**  *(Check all that apply)*

**OR**

- **On Demand**

If offered in a specific semester, will the course be offered only in alternate years?  

- **Yes**
- **No**

If yes, what will be the starting academic year? *(i.e. 2009-09 or 2008-10)*

11) **General Education HASS Distribution**

To propose this course for inclusion on a **HASS Distribution List** (HASS, HASS Creative Endeavors, or HASS Supplemental) please complete the **New Distribution List Proposal** form in your department's binder.

12) **Co-Curricular**

To propose this course for inclusion on the **Co-Curricular List** please complete the **New Co-Curricular List Proposal** form in your department's binder.

13) **Course Computing Lab and Expendables Fees**

**DO NOT RECORD FEE INFORMATION HERE.** Submit course fee information on the **Course Computing Lab and Expendables Fees for New Courses** form included in your department's binder at the end of the fee section.
14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

Degree Program(s):

Proposed MS and PhD programs in the KIP Dept.

*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department’s binder.

15) Course Rationale (Required)

Course is part of the graduate programs being proposed by the KIP Dept.

16) Faculty Contact

Faculty proposing this course (please print): Name Jason R. Carter

Email jcarter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
1) Course Information

Is this a half-semester course proposal?  ☐ Yes  ☑ No

NOTE: All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details: http://www.sas.it.mtu.edu/usenate/proposal/03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110):  EH5500

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)

Advanced Sport Psychology

Alternative Title for Catalog (Up to 100 characters including spaces)

Advanced Sport Psychology

2) Credits

Number of credits assigned to this course 3

OR

Range of credits if variable ☐ to ☐ (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (Lec & Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1-3 contact hours. i.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

☐ 2  ☐ 1  ☐ 0

Lecture  Recitation  Lab

OR

Research Course?  ☐ Yes  ☑ No

OR

Special Topics Course?  ☐ Yes  ☑ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?

☑ No

☐ Yes, for a maximum of ______ credits.  (Must be a multiple of the course credits, i.e. Research or Special Topics)

☐ Yes, for an unlimited number of credits.  (i.e. Music, Varsity sports, etc.)
5) Pass/Fail

Will this course be offered as a **pass/fail option ONLY**? (grade of S or E) □ Yes  ✔ No

6) Cross Listed/Equivalent Course

**Cross Listed**: Is there an identical course offered in a different subject or at a different level? □ Yes  ✔ No

If Yes, what is the other subject and course number? __________________________

**Equivalent Course**: Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes? □ Yes  ✔ No

If Yes, what is the subject and course number of the dropped course? __________________________

7) Corequisites and Prerequisites

**Corequisites** are courses that are **REQUIRED to be taken at the SAME TIME** as this course (courses MUST be offered during the same term):

Required corequisite course(s):
N/A

Prerequisites are courses that are **REQUIRED to be taken PRIOR** to enrollment in this course.

Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):
1 EH5310

□ And or ✔ Or 2 EH5320

□ And or ✔ Or 3 EH5330

□ And or □ Or 4________________________

□ And or □ Or 5________________________

□ And or □ Or 6________________________

A **concurrent prerequisite** is a defined prerequisite course (from list above) that **MAY be taken EITHER simultaneously in the same semester OR in a prior semester. Indicate below applicable courses.**

Concurrent prerequisite course(s):
N/A
8) Catalog Course Description
The traditional catalog style description for this course, up to 40 words. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. Please refer to the guidebook for examples and suggestions on developing a course description.

This course is designed to educate students for roles dealing with ethical performance enhancement in sport and exercise. Upon completion of the course, students will understand the importance of theoretical foundations for improving performance, research and evaluation, developing relationships, individual and group skills, normal and abnormal behavior, and the various psychological factors that affect performance in sport and exercise. This course provides students an opportunity to develop a foundation in applied sport psychology and a knowledge base in the physiological, motor, and psychosocial aspects of sport behavior.

9) Registration Restrictions

• If permission is always required for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

☐ Department  OR  ☐ Instructor

• Students who register for this course may be restricted by their College/School OR their Major. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☐ No College/School Restrictions  ☒ No Major Restrictions

Colleges/Schools who MAY NOT enroll (EXCLUDE)

________________________

-OR-

Colleges/Schools who MAY enroll (INCLUDE)

________________________

Majors that MAY NOT enroll (EXCLUDE)

________________________

-OR-

Majors that MAY enroll (INCLUDE)

________________________

-- Restrictions continued on next page --
• A restriction may also be placed on Class Standing (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☐ No Class Restrictions

Class of students who MAY NOT enroll (EXCLUDE)

-OR-

Class of students who MAY enroll (INCLUDE)

10) Semester(s) Offered

☐ Fall  ☐ Spring  ☐ Summer  (Check all that apply)

OR  ☑ On Demand

If offered in a specific semester, will the course be offered only in alternate years?  ☐ Yes  ☐ No
If yes, what will be the starting academic year? (i.e. 2008-09 or 2009-10)

11) General Education HASS Distribution

To propose this course for inclusion on a HASS Distribution List (HASS, HASS Creative Endeavors, or HASS Supplemental) please complete the New Distribution List Proposal form in your department's binder.

12) Co-Curricular

To propose this course for inclusion on the Co-Curricular List please complete the New Co-Curricular List Proposal form in your department's binder.

13) Course Computing Lab and Expendables Fees

DO NOT RECORD FEE INFORMATION HERE. Submit course fee information on the Course Computing Lab and Expendables Fees for New Courses form included in your department's binder at the end of the fee section.
14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

Degree Program(s):

Proposed MS program in the KIP Dept.


*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department's binder.

15) Course Rationale (Required)

Course is part of the graduate program being proposed by the KIP Dept.

16) Faculty Contact

Faculty proposing this course (please print): Name

Jason R. Carter

Email

carter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
Course Add Proposal

PLEASE COMPLETE THIS FORM IN RED

A guide for completing this form is located at www.admin.mtu.edu/em/faculty/courses/proposal_guide.php

1) Course Information

Is this a half-semester course proposal?  [ ] Yes  [x] No

NOTE: All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details:
http://www.sas.it.mtu.edu/usenate/proposals/03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110):  [EH5510]

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)
Advanced Strength & Conditioning

Alternative Title for Catalog (Up to 100 characters including spaces)
Advanced Strength & Conditioning

2) Credits

Number of credits assigned to this course  3

OR

Range of credits if variable  [ ] to  [ ] (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (i.e. Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1-3 contact hours. i.e. A 3-credit course may be 2
contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

[ ] Lecture  [ ] Recitation  [ ] Lab

OR

Research Course?  [ ] Yes  [x] No

OR

Special Topics Course?  [ ] Yes  [x] No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?

[ ] No

[ ] Yes, for a maximum of _____ credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

[ ] Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail

Will this course be offered as a pass/fail option ONLY? (grade of S or E) □ Yes  ✓ No

6) Cross Listed/Equivalent Course

Cross Listed: Is there an identical course offered in a different subject or at a different level? □ Yes  ✓ No

If Yes, what is the other subject and course number?____________________________

Equivalent Course: Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes? □ Yes  ✓ No

If Yes, what is the subject and course number of the dropped course?____________________________

7) Corequisites and Prerequisites

Corequisites are courses that are REQUIRED to be taken at the SAME TIME as this course (courses MUST be offered during the same term):

Required corequisite course(s):
N/A

Prerequisites are courses that are REQUIRED to be taken PRIOR to enrollment in this course.
Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):

1 EH5310

☐ And or ☑ Or 2 EH5320

☐ And or ☑ Or 3 EH5330

☐ And or ☐ Or 4____________________

☐ And or ☐ Or 5____________________

☐ And or ☐ Or 6____________________

A concurrent prerequisite is a defined prerequisite course (from list above) that MAY be taken EITHER simultaneously in the same semester OR in a prior semester. Indicate below applicable courses.

Concurrent prerequisite course(s):
N/A

____________________________________________________
8) Catalog Course Description

The traditional catalog style description for this course, **up to 40 words**. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog.

Please refer to the guidebook for examples and suggestions on developing a course description.

Advanced theory and practice in development and administration of comprehensive strength and conditioning programs for both the athlete and individual of any level. Includes knowledge, safety concerns and skill techniques necessary for teaching and administering any strength and conditioning facility. This will be done through a combination of lecture, seminar, scientific articles and practical experience.

9) Registration Restrictions

- If permission is **always required** for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

  Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

  [ ] Department  OR  [ ] Instructor

- Students who register for this course may be restricted by their College/School OR their Major. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

  [✓] No College/School Restrictions

  Colleges/Schools who MAY NOT enroll (EXCLUDE)

  ___________________________________________________________________

  -OR-

  Colleges/Schools who MAY enroll (INCLUDE)

  ___________________________________________________________________

  [✓] No Major Restrictions

  Majors that MAY NOT enroll (EXCLUDE)

  ___________________________________________________________________

  -OR-

  Majors that MAY enroll (INCLUDE)

  ___________________________________________________________________

  -- Restrictions continued on next page --
A restriction may also be placed on **Class Standing** (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

- No Class Restrictions

Class of students who MAY NOT enroll (EXCLUDE)

-OR-

Class of students who MAY enroll (INCLUDE)

10) Semester(s) Offered

- Fall  
- Spring  
- Summer (Check all that apply)  

OR  

- On Demand

If offered in a specific semester, will the course be offered only in alternate years?  

- Yes   - No

If yes, what will be the starting academic year?  *(i.e. 2008-09 or 2009-10)*

11) General Education HASS Distribution

To propose this course for inclusion on a **HASS Distribution List** *(HASS, HASS Creative Endeavors, or HASS Supplemental)* please complete the **New Distribution List Proposal** form in your department's binder.

12) Co-Curricular

To propose this course for inclusion on the **Co-Curricular List** please complete the **New Co-Curricular List Proposal** form in your department's binder.

13) Course Computing Lab and Expendables Fees

**DO NOT RECORD FEE INFORMATION HERE.** Submit course fee information on the **Course Computing Lab and Expendables Fees for New Courses** form included in your department's binder at the end of the fee section.
14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

Degree Program(s):

Proposed MS program in the KIP Dept.


*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department’s binder.

15) Course Rationale (Required)

Course is part of the graduate program being proposed by the KIP Dept.

16) Faculty Contact

Faculty proposing this course (please print): Name Jason R. Carter

Email jrcarter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
1) Course Information

Is this a half-semester course proposal?  □ Yes  □ No

**NOTE:** All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details: http://www.sas.it.mtu.edu/usenate/proposal/03/10-03.htm

**Course Prefix/Number** (i.e. MEEM 2110): **EH5900**

**Course Title** (abbreviated; used on transcript - Up to 30 characters including spaces)

Laboratory Techniques in Integrative Physiology

**Alternative Title for Catalog** (Up to 100 characters including spaces)

Laboratory Techniques in Integrative Physiology

---

2) Credits

Number of credits assigned to this course 2

OR

Range of credits if variable □ to □ (Number of credits to be taken in a given semester)

3) Schedule

**Contact Hours per Week** (Lec & Rec: 1 credit =1 contact hour; Lab: 1 credit =1-3 contact hours. i.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

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<tr>
<td>Lecture</td>
<td>Recitation</td>
<td>Lab</td>
</tr>
</tbody>
</table>

OR

Research Course? □ Yes  □ No

OR

Special Topics Course? □ Yes  □ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?

☑ No

☐ Yes, for a maximum of _____ credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

☐ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail

Will this course be offered as a **pass/fail option ONLY?** (grade of S or E) [ ] Yes [ ] No

6) Cross Listed/Equivalent Course

**Cross Listed:** Is there an identical course offered in a different subject or at a different level? [ ] Yes [ ] No

If Yes, what is the other subject and course number? __________________________

**Equivalent Course:** Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes? [ ] Yes [ ] No

If Yes, what is the subject and course number of the dropped course? __________________________

7) Corequisites and Prerequisites

**Corequisites** are courses that are **REQUIRED to be taken at the SAME TIME** as this course (courses MUST be offered during the same term):

```
Required corequisite course(s):
N/A
```

**Prerequisites** are courses that are **REQUIRED to be taken PRIOR** to enrollment in this course.
Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

```
Required prerequisite course(s):
1 EH5310
[ ] And or [ ] Or 2 EH5320
[ ] And or [ ] Or 3 EH5330
[ ] And or [ ] Or 4 __________________________
[ ] And or [ ] Or 5 __________________________
[ ] And or [ ] Or 6 __________________________
```

A **concurrent prerequisite** is a defined prerequisite course (from list above) that **MAY** be taken **EITHER** simultaneously in the same semester **OR** in a prior semester. Indicate below applicable courses:

```
Concurrent prerequisite course(s):
N/A
______________________________
______________________________
```

Course Add Proposal
Rev: 01/09
www.mtu.edu/registrar
Page 2 of 5
8) Catalog Course Description
The traditional catalog style description for this course, up to 40 words. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. Please refer to the guidebook for examples and suggestions on developing a course description.

This course will expose graduate students to various methodologies in integrative physiology. Student will rotate between various laboratories and observe techniques such as microneurography, electrophysiology, molecular physiology, muscular fatigue, etc.; both human and animal methodologies will be examined.

9) Registration Restrictions
- If permission is always required for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

☑️ Department  OR  ☐️ Instructor

- Students who register for this course may be restricted by their College/School OR their Major. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☑️ No College/School Restrictions

Colleges/Schools who MAY NOT enroll (EXCLUDE)
_________________________________________
-OR-
Colleges/Schools who MAY enroll (INCLUDE)
_________________________________________

☑️ No Major Restrictions

Majors that MAY NOT enroll (EXCLUDE)
_________________________________________
-OR-
Majors that MAY enroll (INCLUDE)
_________________________________________

-- Restrictions continued on next page --
• A restriction may also be placed on Class Standing (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

  ☑ No Class Restrictions

  Class of students who MAY NOT enroll (EXCLUDE)

  -OR-

  Class of students who MAY enroll (INCLUDE)

10) Semester(s) Offered

☐ Fall  ☐ Spring  ☐ Summer  (Check all that apply)

  OR  ☑ On Demand

  If offered in a specific semester, will the course be offered only in alternate years?  ☐ Yes  ☐ No

  If yes, what will be the starting academic year?  (i.e. 2008-09 or 2009-10)

11) General Education HASS Distribution

  To propose this course for inclusion on a HASS Distribution List (HASS, HASS Creative Endeavors, or HASS Supplemental) please complete the New Distribution List Proposal form in your department's binder.

12) Co-Curricular

  To propose this course for inclusion on the Co-Curricular List please complete the New Co-Curricular List Proposal form in your department's binder.

13) Course Computing Lab and Expendables Fees

  DO NOT RECORD FEE INFORMATION HERE. Submit course fee information on the Course Computing Lab and Expendables Fees for New Courses form included in your department's binder at the end of the fee section.
14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

Degree Program(s):
Proposed MS program in the KIP Dept.


*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department's binder.

15) Course Rationale *(Required)*

Course is part of the graduate program being proposed by the KIP Dept.


16) Faculty Contact

Faculty proposing this course *(please print)*: Name  Jason R. Carter

Email  jcarter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
1) Course Information

Is this a half-semester course proposal?  □ Yes  □ No

NOTE: All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details:
http://www.sas.it.mtu.edu/usenate/propose/03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110):  EHS920

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)

Graduate Seminar

Alternative Title for Catalog (Up to 100 characters including spaces)

Graduate Seminar

2) Credits

Number of credits assigned to this course  1

OR

Range of credits if variable  □ to  □  (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (Lec & Rec: 1 credit =1 contact hour; Lab: 1 credit =1-3 contact hours. i.e. A 3-credit course may be 2
course hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 3 contact hours of lab)

□ 0  □ 1  □ 0

Lecture  Recitation  Lab

OR

Research Course?  □ Yes  □ No

OR

Special Topics Course?  □ Yes  □ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?  □ No

□ Yes, for a maximum of  2  credits.  (Must be a multiple of the course credits, i.e. Research or Special Topics)

□ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail

Will this course be offered as a pass/fail option ONLY? (grade of S or E) □ Yes ☑ No

6) Cross Listed/Equivalent Course

Cross Listed: Is there an identical course offered in a different subject or at a different level? □ Yes ☑ No

If Yes, what is the other subject and course number? ______________________

Equivalent Course: Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes? □ Yes ☑ No

If Yes, what is the subject and course number of the dropped course? ______________________

7) Corequisites and Prerequisites

Corequisites are courses that are REQUIRED to be taken at the SAME TIME as this course (courses MUST be offered during the same term):

Required corequisite course(s):
N/A

Prerequisites are courses that are REQUIRED to be taken PRIOR to enrollment in this course. Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):
□ And or ☑ Or 1. EH5310
□ And or ☑ Or 2. EH5320
□ And or ☑ Or 3. EH5330
□ And or ☑ Or 4. __________________________
□ And or ☑ Or 5. __________________________
□ And or ☑ Or 6. __________________________

A concurrent prerequisite is a defined prerequisite course (from list above) that MAY be taken EITHER simultaneously in the same semester OR in a prior semester. Indicate below applicable courses.

Concurrent prerequisite course(s):
N/A

______________________________________________
8) Catalog Course Description
The traditional catalog style description for this course, **up to 40 words**. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. Please refer to the guidebook for examples and suggestions on developing a course description.

Graduate seminars are designed to facilitate critical discussions of student research projects and peer-reviewed research in related fields. The presenter will provide an overview or seminar of the research of interest, which will establish the foundation for the discussion thereafter.

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9) Registration Restrictions

- If permission is always required for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

  Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

  ☑ Department  OR  ☐ Instructor

- Students who register for this course may be restricted by their College/School OR their Major. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

  ☑ No College/School Restrictions

  Colleges/Schools who MAY NOT enroll (EXCLUDE)

  ________________________________________________

  -OR-

  Colleges/Schools who MAY enroll (INCLUDE)

  ________________________________________________

  ☑ No Major Restrictions

  Majors that MAY NOT enroll (EXCLUDE)

  ________________________________________________

  -OR-

  Majors that MAY enroll (INCLUDE)

  ________________________________________________

-- Restrictions continued on next page --
• A restriction may also be placed on Class Standing (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☐ No Class Restrictions

Class of students who MAY NOT enroll (EXCLUDE)

____________________________________________________________________________

-OR-

Class of students who MAY enroll (INCLUDE)

____________________________________________________________________________

10) Semester(s) Offered

☐ Fall  ☑ Spring  ☐ Summer  (Check all that apply)

OR  ☐ On Demand

If offered in a specific semester, will the course be offered only in alternate years?  ☐ Yes  ☑ No

If yes, what will be the starting academic year? (i.e. 2008-09 or 2009-10)______________

11) General Education HASS Distribution

To propose this course for inclusion on a HASS Distribution List (HASS, HASS Creative Endeavors, or HASS Supplemental) please complete the New Distribution List Proposal form in your department's binder.

12) Co-Curricular

To propose this course for inclusion on the Co-Curricular List please complete the New Co-Curricular List Proposal form in your department's binder.

13) Course Computing Lab and Expendables Fees

DO NOT RECORD FEE INFORMATION HERE. Submit course fee information on the Course Computing Lab and Expendables Fees for New Courses form included in your department's binder at the end of the fee section.
14) **Degree Programs which this course will affect**
List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

```
Degree Program(s):
Proposed MS and PhD programs in the KIP Dept.

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*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department’s binder.

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15) **Course Rationale (Required)**

Course is part of the graduate programs being proposed by the KIP Dept.

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16) **Faculty Contact**

Faculty proposing this course *(please print)*: Name **Jason R. Carter**

Email **jocarter@mtu.edu**

---

**DID YOU USE RED INK TO COMPLETE THIS FORM?**
**IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.**
1) Course Information

Is this a half-semester course proposal?  
☐ Yes  ☑ No

**NOTE:** All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details: http://www.sas.it.mtu.edu/usenate/propose/03/10-03.htm

**Course Prefix/Number** (i.e. MEEM 2110):  **EH5950**

**Course Title** (abbreviated; used on transcript - Up to 30 characters including spaces)

Graduate Internship in Kinesiology

**Alternative Title for Catalog** (Up to 100 characters including spaces)

Graduate Internship in Kinesiology


2) Credits

Number of credits assigned to this course  **6**

OR

Range of credits if variable  ☐ to ☐ (Number of credits to be taken in a given semester)


3) Schedule

**Contact Hours per Week** (Lec & Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1-3 contact hours. I.e. A 3-credit course may be 2 contact hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

☐ Lecture  ☐ Recitation  ☐ Lab

OR

Research Course?  ☐ Yes  ☑ No

OR

Special Topics Course?  ☑ Yes  ☐ No


4) Additional Credits

May students receive **additional credits** by taking and passing this course **more than once**?

☑ No

☐ Yes, for a maximum of _____ credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

☐ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail
Will this course be offered as a pass/fail option ONLY? (grade of S or E) □ Yes ☑ No

6) Cross Listed/Equivalent Course
Cross Listed: Is there an identical course offered in a different subject or at a different level? □ Yes ☑ No
If Yes, what is the other subject and course number? __________________________

Equivalent Course: Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes? □ Yes ☑ No
If Yes, what is the subject and course number of the dropped course? __________________________

7) Corequisites and Prerequisites
Corequisites are courses that are REQUIRED to be taken at the SAME TIME as this course (courses MUST be offered during the same term):

Required corequisite course(s):
N/A

Prerequisites are courses that are REQUIRED to be taken PRIOR to enrollment in this course. Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):
1 N/A
□ And or □ Or 2 ______________________
□ And or □ Or 3 ______________________
□ And or □ Or 4 ______________________
□ And or □ Or 5 ______________________
□ And or □ Or 6 ______________________

A concurrent prerequisite is a defined prerequisite course (from list above) that MAY be taken EITHER simultaneously in the same semester OR in a prior semester. Indicate below applicable courses.

Concurrent prerequisite course(s):
N/A

__________________________

__________________________
8) Catalog Course Description
The traditional catalog style description for this course, up to 40 words. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog. Please refer to the guidebook for examples and suggestions on developing a course description.

Practical experience in the field of kinesiology at an approved internship site. Provides experience in a variety of exercise science or medical settings. Internships must be approved by the department chair or graduate director, and work a minimum of 50 hours for each credit earned.

9) Registration Restrictions

- If permission is always required for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

☑️ Department  OR  ☐ Instructor

- Students who register for this course may be restricted by their College/School OR their Major. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☐ No College/School Restrictions

☐ No Major Restrictions

Colleges/Schools who MAY NOT enroll (EXCLUDE)

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-OR-

Colleges/Schools who MAY enroll (INCLUDE)

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Majors that MAY NOT enroll (EXCLUDE)

-----------------------------

-OR-

Majors that MAY enroll (INCLUDE)

 Proposed MS program in the KIP Dept.

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-- Restrictions continued on next page --
• A restriction may also be placed on **Class Standing** (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☐ No Class Restrictions

Class of students who MAY NOT enroll (EXCLUDE)

-OR-

Class of students who MAY enroll (INCLUDE)

10) **Semester(s) Offered**

☐ Fall ☑ Spring ☑ Summer *(Check all that apply)*

OR

☐ On Demand

If offered in a specific semester, will the course be offered only in alternate years? ☐ Yes ☑ No

If yes, what will be the starting academic year? *(i.e. 2008-09 or 2009-10)*

11) **General Education HASS Distribution**

To propose this course for inclusion on a **HASS Distribution List** (HASS, HASS Creative Endeavors, or HASS Supplemental) please complete the **New Distribution List Proposal** form in your department's binder.

12) **Co-Curricular**

To propose this course for inclusion on the **Co-Curricular List** please complete the **New Co-Curricular List Proposal** form in your department's binder.

13) **Course Computing Lab and Expendables Fees**

**DO NOT RECORD FEE INFORMATION HERE.** Submit course fee information on the **Course Computing Lab and Expendables Fees for New Courses** form included in your department's binder at the end of the fee section.
14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective:

Degree Program(s):
Proposed MS program in the KIP Dept.

*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department's binder.

15) Course Rationale (Required)

Course is part of the graduate program being proposed by the KIP Dept.

16) Faculty Contact

Faculty proposing this course (please print): Name Jason R. Carter

Email jocarter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
1) Course Information

Is this a half-semester course proposal? ☐ Yes ☑ No

NOTE: All half-semester courses must follow rules set in Faculty Senate Proposal 4-00. See Senate website for details:
http://www.sas.it.mtu.edu/usenate/propose/03/10-03.htm

Course Prefix/Number (i.e. MEEM 2110): EHS990

Course Title (abbreviated; used on transcript - Up to 30 characters including spaces)
Master's Thesis in Kinesiology

Alternative Title for Catalog (Up to 100 characters including spaces)
Master's Thesis in Kinesiology

2) Credits

Number of credits assigned to this course _____

OR

Range of credits if variable 1 to 9 (Number of credits to be taken in a given semester)

3) Schedule

Contact Hours per Week (Lec & Rec: 1 credit = 1 contact hour; Lab: 1 credit = 1 contact hour. i.e. A 3-credit course may be 2
course hours of lecture or recitation and up to 3 contact hours of lab OR 1 contact hour of lecture or recitation and up to 6 contact hours of lab)

☐ Lecture ☐ Recitation ☐ Lab

OR

Research Course? ☑ Yes ☐ No

OR

Special Topics Course? ☐ Yes ☑ No

4) Additional Credits

May students receive additional credits by taking and passing this course more than once?

☐ No

☑ Yes, for a maximum of 20 credits. (Must be a multiple of the course credits, i.e. Research or Special Topics)

☐ Yes, for an unlimited number of credits. (i.e. Music, Varsity sports, etc.)
5) Pass/Fail
Will this course be offered as a pass/fail option ONLY? (grade of S or E) ☑ Yes ☐ No

6) Cross Listed/Equivalent Course
Cross Listed: Is there an identical course offered in a different subject or at a different level? ☐ Yes ☑ No
If Yes, what is the other subject and course number? ____________________________

Equivalent Course: Does this course replace a dropped course with no change in course content for degree requirements, prerequisites, and repeating purposes? ☐ Yes ☑ No
If Yes, what is the subject and course number of the dropped course? _________________

7) Corequisites and Prerequisites
Corequisites are courses that are REQUIRED to be taken at the SAME TIME as this course (courses MUST be offered during the same term):

Required corequisite course(s):
N/A

Prerequisites are courses that are REQUIRED to be taken PRIOR to enrollment in this course. Select appropriate box and use parentheses where needed (refer to the guidebook for examples):

Required prerequisite course(s):
1 N/A
☐ And or ☐ Or 2 ____________________
☐ And or ☐ Or 3 ____________________
☐ And or ☐ Or 4 ____________________
☐ And or ☐ Or 5 ____________________
☐ And or ☐ Or 6 ____________________

A concurrent prerequisite is a defined prerequisite course (from list above) that MAY be taken EITHER simultaneously in the same semester OR in a prior semester. Indicate below applicable courses.

Concurrent prerequisite course(s):
N/A ____________________

_______________________
_______________________
8) Catalog Course Description
The traditional catalog style description for this course, up to 40 words. If course is proposed as a half-semester course, please include that information in the description so students will see it in the printed catalog.
Please refer to the guidebook for examples and suggestions on developing a course description.

An original research investigation in kinesiology that culminates in a thesis.

9) Registration Restrictions

- If permission is always required for registration purposes (a student cannot enter the course without department or instructor signature), please select the appropriate permission.

  Do not select unless EVERY STUDENT must get "SIGNED INTO" the class.

  ✔️ Department  OR  ☐ Instructor

- Students who register for this course may be restricted by their College/School OR their Major. Please indicate if any college or major restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

☐ No College/School Restrictions

 Colleges/Schools who MAY NOT enroll (EXCLUDE)

________________________________________

-OR-

 Colleges/Schools who MAY enroll (INCLUDE)

________________________________________

☐ No Major Restrictions

 Majors that MAY NOT enroll (EXCLUDE)

________________________________________

-OR-

 Majors that MAY enroll (INCLUDE)

 Proposed MS program in the KIP Dept.

________________________________________

-- Restrictions continued on next page --
• A restriction may also be placed on **Class Standing** (Freshman, Sophomore, Junior, Senior, Graduate). Please indicate if any class restrictions should be applied to this course. If there are no restrictions please indicate in the check box provided.

- **No Class Restrictions**

  Class of students who MAY **NOT** enroll (EXCLUDE)

  UG

  **-OR-**

  Class of students who MAY enroll (INCLUDE)

10) **Semester(s) Offered**

   [✓] Fall  [✓] Spring  [✓] Summer  (Check all that apply)

   OR  [☐] On Demand

   If offered in a specific semester, will the course be offered only in alternate years?  [☐] Yes  [☐] No

   If yes, what will be the starting academic year?  (**i.e.  2008-09 or 2009-10**).

11) **General Education HASS Distribution**

    To propose this course for inclusion on a **HASS Distribution List** (HASS, HASS Creative Endeavors, or HASS Supplemental) please complete the **New Distribution List Proposal** form in your department's binder.

12) **Co-Curricular**

    To propose this course for inclusion on the **Co-Curricular List** please complete the **New Co-Curricular List Proposal** form in your department's binder.

13) **Course Computing Lab and Expendables Fees**

    **DO NOT RECORD FEE INFORMATION HERE.** Submit course fee information on the **Course Computing Lab and Expendables Fees for New Courses** form included in your department’s binder at the end of the fee section.
14) Degree Programs which this course will affect

List the degrees, minors, and certificates in which this course will be required or used as an elective: ***

Degree Program(s):
Proposed MS program in the KIP Dept.


*** Be sure to adjust the appropriate degree audits in sections 7 and 8 in your department's binder.

15) Course Rationale (Required)

Course is part of the graduate program being proposed by the KIP Dept.


16) Faculty Contact

Faculty proposing this course (please print): Name Jason R. Carter

Email jcarter@mtu.edu

DID YOU USE RED INK TO COMPLETE THIS FORM?
IF NOT, PLEASE HIGHLIGHT YOUR ANSWERS SO NOTHING IS MISSED IN PROCESSING.
Appendix B

In accordance with Senate policy 51-04, we include the additional information to assist the Senate, and particularly the Senate Finance Committee, in assessing the potential financial implications of the proposed program.

I. Relation to University Strategic Plan
   a. Relation of program to the university’s educational and research goals.

   The University strategic plan focuses on three fundamental goals: 1) world-class faculty/staff, students, 2) distinctive and discovery-based learning, and 3) world-class research, scholarship, creativity, etc.

   While the proposed degree relates to several of these goals, it seems to particularly relate to Goal 3.1 and Goal 2.3. First and foremost, Goal 3.1 calls for “increase residential and non-residential master’s offerings and enrollment.” While 5th year MS programs are currently more common within Michigan Tech Engineering programs, there are areas within the College of Sciences and Arts where course-based MS programs may be appropriate and desirable for students. We believe Kinesiology represents such an opportunity because many of our undergraduates that do not pursue a professional graduate degrees (i.e., medical school, physical therapy, physician assistant, etc.) go on to get a MS to make them more competitive for a career in strength and conditioning, fitness, or sports administration. Moreover, 5th year course-based MS programs are professionally acceptable for these fitness/administrative careers.

   Second, Goal 2.3 aims to support “Graduates with the ability to respond to the needs and challenges of the 21st century.” One of the ‘challenges’ of the 21st century is unsustainable increases in healthcare costs, and the economic consequences. In a time of great uncertainty when it comes to healthcare, everyone agrees that preventative wellness is a key aspect of healthy living. This graduate program includes advanced learning related to exercise, nutrition, sleep, stress physiology, and overall weight management.

   Lastly, it is important to highlight that Inside Higher Ed recently reported that kinesiology is “one of the fastest-growing majors in the country.” Accordingly, there is a strong base of undergraduate students to draw from for this graduate program, and a need for high-quality graduate programs. (http://www.insidehighered.com/news/2010/08/11/kinesiology).

   b. Consistency with the university’s resource allocation criteria.
The university’s resource allocation criteria are somewhat amorphous, but for academic units in the College of Sciences and Arts it begins with support from the Dean and other department chairs. This proposal has been discussed at College Council, and has the support of the Dean and other College of Sciences and Arts chairs.

Regarding the request for a Professor of Practice, this was requested for three reasons. First, we are proposing new courses that require additional instruction beyond our existing faculty and two pending searches. As outlined in the financial portion of the proposal, the 11-16 M.S. students associated with this degree will generate enough to support this Professor of Practice and still contribute ~$100,000 to the general fund. Second, there was some precedent for this approach given last year’s Master of Geographic Information Science (which also requested a Professor of Practice). Third, a Professor of Practice seems to be a more appropriate than a tenure-track faculty request because if enrollment targets are not met, there is a way to pull back this funding.

II. Impact on University Enrollment
   a. Projected number of students in the program.

   As outlined in the proposal, our goal is to have a total of 5-10 coursework (Plan D) MS students per year. We anticipate the majority of those Plan D students being 5th year MS students, thus completing within one year. Regarding the thesis-based (Plan A) MS degree, we estimate 1 MS student for every tenure/tenure-track faculty. We currently have 4 faculty and 2 ongoing searches, so in steady-state we expect approximately 6 Plan A MS students. Therefore, in total we expect somewhere between 11-16 MS students in this program.

   b. Source of new students; in particular, will the students be drawn from existing programs, or will they be students who would otherwise not have come to MTU?

   We anticipate somewhere around a 50/50 split (i.e., 50% from our existing departmental undergraduate students and 50% that obtained their baccalaureate from another institution who otherwise would not have come to Michigan Tech).

   c. What is the likely correlation between demand for the new program and existing enrollment patterns at MTU?

   The existing enrollment patterns at Michigan Tech (primarily within the College of Engineering) are strong with regards to coursework M.S. degrees. We believe the same will be true in Kinesiology, which is a field
with the College of Sciences and Arts that is well suited for a Plan D Master’s degree.

d. What is the current enrollment in the unit?

The department has been pretty steady over the last few years at about 130 students (~90 in Exercise Science and ~30 in Sports and Fitness Management).

III. Impact on Resources Required by Department in Which the Program is housed. This would include, but not be limited to:

a. Faculty lines.

No new tenure-track faculty lines are requested. We have two ongoing searches (i.e., replacement searches) that will be crucial for the proposed degree. Additionally, we have requested a Professor of Practice line starting in Year 2 of the program (rationale provided previously and within the full proposal).

b. Faculty and student labs, including ongoing maintenance.

Existing undergraduate teaching and research laboratories can sufficiently support the graduate students proposed. The courses associated with laboratory needs have requested course fees comparable to what is requested for undergraduates. These funds will be used to support common equipment and maintenance, including the metabolic carts and ergometers for estimating maximum oxygen consumption during exercise.

c. Advising.

The Plan A students will be advised by tenure-track faculty. The Plan D students will be advised by the Professor of Practice.

d. Assessment.

Although current assessment is being focused on undergraduate degrees, we anticipate future focus on the graduate programs. Our curricular committee that oversees assessment is prepared for this additional assessment, and the Professor of Practice is likely to be involved in assisting with some of this additional service workload. We will participate in any university level assessment requirements for graduate programs when these are put in place.

IV. Impact on Resources Required By other Units Within the University. This analysis would include, but not necessarily be limited to, the impacts on:
a. Other academic (e.g., Gen Ed) units with regard to faculty, labs and assessment. (NOTE: The current Student to Faculty ratio for the university as a whole is approximately 12:1 per Institutional Analysis.)

This is a graduate degree, so it does not impact Gen Ed. We have proposed to allow certain courses from Biological Sciences, Mathematical Sciences, Psychology, and Biomedical Engineering as free-electives. This was done with permission from all of the respective department chairs, and we do not anticipate these few free electives impacting resources required by other units within the University.

b. Information Technology, the Library, central administration and career planning with respect to the impact on the need for computing services, library resources, advising, record keeping, development of employer relations etc.

Any degree program is going to impact all of these areas (i.e., IT, Library, record keeping, etc.). However, we are estimating a modest number of total students (11-16 M.S. students in steady state). We believe the $100,000+ net revenue is more than adequate to cover these additional expenses.

V. Assessment of the ability to obtain the necessary resources assuming requested funds are obtained

a. For high demand fields (e.g., business fields, etc.), will it be possible to fill allocated lines

Yes, we expect no problem filling allocated lines for this program; we have successfully filled open departmental lines over the past 7 years.

VI. Past proposals. Has the department initiated any other new degree programs in the last five years?

The department has not initiated any other new degree programs in the last five years.

VII. Departmental Budget contribution

a. What is the department's total general fund budget?

FY 2014: $642,135

b. How much tuition does the department generate? This information should be provided for both the credit hours taught by the department and the number of credit hours taken by the department's majors.
With the recent change to ‘flat-rate tuition’ in AY14, it is unclear if this question is still relevant, and if so, how to provide a reasonable number. Additionally, there are other factors such as in-state vs. out-of-state tuition that influence this calculation. Given the new flat-rate tuition policy, we kindly request the Senate Finance Committee to clarify how they would like to see this calculation (if in fact they deem it appropriate and necessary). In accordance with Senate policy 51-04, we will work with the Provost office to obtain the calculation once the request is clarified given the recent changes.

VIII. How do the benefits from this program compare to other alternatives that are currently under consideration or development. Will approval and allocation of resources to this program preclude the development of other programs?

As outlined in the main proposal, the program appears to be financially sustainable. Even with the new Professor of Practice, each of the first three years provides new financial contributions to the University general fund budget. By year 3 (i.e., steady-state), the new program is expected to generate $100,000+ net income for the University. We do not anticipate that approval and allocations provided for this degree will preclude the development of other programs.
Graduate Faculty Council—Draft Agenda

October 1, 2013

NOTE: (all handouts connected to a single pdf file)

1. Review minutes of 09/10/13

2. Committee Reports:
   a. Research Only Mode

3. Old Business:
   a. Naming Master's Programs (Dean Huntoon)
   b. SOT: Dual Degree Program (J. Frendewey/E. Levin)
   c. Publishing Agreement - Additional Approval Signature (D. Charlesworth)

4. New Business
   a. Master of Science Degree Program in Kinesiology (J. Carter)
   b. Master Program in Accountancy Proposal (J. Tuoriniemi)
   c. GFC Liaison to the University Senate (Dean Huntoon)
   d. Announcement: Independent Study Credits and Unacceptable Practices (Dean Huntoon)
   e. Accelerated Master's Program - BS/MS dual enrollment, unanticipated challenge (Dean Huntoon)
   f. Call for an Ad Hoc Committee - Clarify/communicate accurate info regarding thesis/dissertation submission and review (Dean Huntoon)
   g. Information Item: GFC Agenda Items will be brought forth from the Department interested in the topic (Dean Huntoon)
   h. Information Item: Allowing students from other departments into your accelerated master's program (Dean Huntoon)