PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

DEPARTMENT: Physics
EFFECTIVE SESSION: Spring 2012

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- [ ] 1. New course with supporting documents
- [ ] 2. Add existing course offered at another campus
- [ ] 3. Expatriation of a course
- [ ] 4. Change in course number
- [ ] 5. Change in course title
- [ ] 6. Change in course credit/type
- [ ] 7. Change in course attributes (department head signature only)
- [X] 8. Change in instructional hours
- [ ] 9. Change in course description
- [ ] 10. Change in course prerequisites
- [ ] 11. Change in semesters offered (department head signature only)
- [ ] 12. Transfer from one department to another

PROPOSED:

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>PHYS</th>
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<tbody>
<tr>
<td>Course Number</td>
<td>13100</td>
</tr>
<tr>
<td>Long Title</td>
<td>Concepts in Physics</td>
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<tr>
<td>Short Title</td>
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EXISTING:

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<td>Course Number</td>
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TERMS OFFERED:

- [X] Fall
- [X] Spring
- [ ] Summer

CAMPUS(ES) INVOLVED

- [ ] Calumet
- [ ] Cont Ed
- [X] Ft. Wayne
- [ ] Tech Statewide
- [ ] W. Lafayette
- [ ] Indianapolis

ABBREVIATED TITLE WILL BE ENTERED BY THE OFFICE OF THE REGISTRAR IF OMITTED. (30 CHARACTERS ONLY)

CREDIT TYPE

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<td>Minimum Cr. Hrs. (Check One)</td>
<td>To</td>
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<td>Equivalent Credit: Yes</td>
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COURSE ATTRIBUTES: Check All That Apply

| 1. Pass/Not Pass Only |
| 2. Satisfactory/Unsatisfactory Only |
| 3. Repeatable |
| 4. Credit by Examination [X] |
| 5. Fees: Coop Lab Rate Request |
| Include comment to explain fee |
| 6. Registration Approval Type |
| Department | Instructor |
| 7. Variable Title |
| 8. Honors |
| 9. Full Time Privilege |
| 10. Off Campus Experience |

SCHEDULE TYPE

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MEETINGS PER WEEK: 2

% OF CREDIT ALLOCATED

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

A nonmathematical course that introduces students to physics through interactive investigations and discussions. Everyday life is compared to the scientific concepts of forces, motion, momentum and energy.

* COURSE LEARNING OUTCOMES:

Students completing this course will have demonstrated a conceptual understanding of mechanics based topics in physics. Students will have improved their critical thinking and problem solving skills through experimental investigations and demonstrated the ability to communicate their understanding by working in groups during investigations.

Calumet Department Head: Signature: Date: 1/3/14
Ft. Wayne Department Head: Signature: Date: 6/13/11
Indianapolis Department Head: Signature: Date: 
North Central Faculty Senate Chair: Signature: Date: 
West Lafayette Department Head: Signature: Date: 

OFFICE OF THE REGISTRAR
Physics 131: Concepts in Physics

Time/Location: Online course – to be attended in place of free time, meals and sleep
Instructor: Jacob Millspaw, Ph D.
Office: KT 126a
Email: millspaj@ipfw.edu (also via blackboard messaging)
Phone: 481-5475
Text: Physics 131 Exploration Kit! (more on this later....)
Office Hours: N/A?!!?!

Since the course is presented online there will be no official office hours. However, if for some reason you do wish to meet during the semester face to face we can setup a time or if you happen to be on campus feel free to swing by my office. My door is always open but there is the possibility that I will be busy.

#1 most important thing . . . . You must read. I will repeat this often but not often enough. This is an online course. The primary means of communication between myself and you and you and myself will be through words and diagrams. It is important then that you read everything completely! If it is long, set it down and come back but you are required to read any and all documents released as content, especially the syllabus.

Things required of you!

- Note taking materials – This is an online course but this does not mean you will not need to make notes related to the material, or work things out on paper. You will often need to refer back to previous observations or assignments so it is important to keep notes and stay organized.
- Drawing materials – You will be doing various hand drawn diagrams that will be important for your understanding of the material. Graph paper, a ruler, and other helpful utensils are a benefit.
- An open mind – Some of the ideas you think you have about the subject matter in this course will be challenged. Be prepared to allow for new ideas and understandings of how the world behaves.
- Observational skills – Along with your open mind, strong observational skills are what you need to help construct new ideas and obtain a better understanding of the physical world around you. You will need to remember (or refer back to) previous observations made along with your current observations to develop understanding of the course material.
- Work Ethic – Come ready to participate and put in the required amount of time to learn the material.

General Education:

Physics 131 is an area 2 general education course. As such it has the following learning objectives. Students who have completed the General Education requirements at IPFW are expected:

- To be familiar with the important modes of human thought that are the foundations of science, philosophy, art and social behavior. We will discuss the nature of science in depth at the beginning of the semester and you will be applying a scientific methodology throughout the semester.
- To possess effective foundation skills:
Read, write, and speak with comprehension, clarity, and precision.
Identify substantive knowledge and disciplinary methods.
Develop information literacy skills.
Reason quantitatively (as means of gaining and creating knowledge and drawing reliable conclusions)

*Homework will require writing. You will be communicating in on-line discussions within your group and also in overall class discussions. You will have to do research and you will be expected to use quantitative reasoning on the homework, quizzes and course materials.*

- To demonstrate the ability to think critically and to solve problems using the foundation skills
  - Evaluate their ideas and the ideas of others based upon disciplined reasoning.
  - Understand the traditions that have formed one’s own and other cultures.
  - Be able to articulate their ideas in appropriate media.

  *All of the homework will involve critical thinking and problem solving. You will have to put your observations and conclusions into text during the discussions.*

**Course Expectations and Outcomes:**
Getting to know Physics! Physics is an amazing, diverse and eye opening subject. While I can not cover every topic in this course we will be working together to understand some introductory physics concepts. My goal is to introduce you to and help you understand a variety of topics in physics in a comfortable, interesting and fun way! Your role is to learn some physics... easy enough right? The key to this success is participation. The number one way to learn is to be involved. Participation is the key to involvement! Our goals are

- Understand the nature of science.
- Demonstrate a conceptual understanding of mechanics based topics in physics.
- Improved critical thinking and problem solving skills through experimental investigations and demonstrate the ability to communicate conceptual understanding of related topics.
- To have fun!

**Basic Course Description:**
Physics 131 is first and most importantly a **physics course**! This can sometimes be frightening and other times (almost always) be very interesting! Physics is an investigation science. As a physicist it is **important** to me that you learn about performing scientific investigations! Often we find fantastic **demonstrations** in physics and they are often delivered at the front of the class! While these are interesting, they have some significant flaws. **First, they are demonstrations!** This is nothing more than the visual equivalent of someone asking you to remember all of the words I put up on the board! **Secondly, it is very hard for students to watch these in an online course and see what is going on!** Our **solution**, create an at home investigation environment where the learning is done hands on **right in front of you in your own workspace**! We designed **Physics Exploration kits**! These kits are designed (and built by hand here in Fort Wayne) by Cognos-Labs and offer a variety of interesting explorations into topics in physics. **We will be using these kits continuously throughout the course. You MUST have access to one to complete the assignments.**
PAUSE! Are you reading? This is an online course and it will be important that you read carefully the material, posts and assignments presented to you. This information is in this syllabus important for your success in the course.

Course Structure:
The course will revolve around our learning community (online discussions, video content and inquiry based activities) and hands on investigations (using the Physics Exploration Kits). The assessment for the course will be examining four major components.

- Participation
- Discussion
  - Discussions that you invoke related to course material.
  - Responses to discussions started by your classmates.
- Investigations, Homework and Quizzes
  - Homeworks will include investigations with physics kits, answering questions related to our investigations, problems examining your understanding of topics in physics.
  - Quizzes may appear infrequently and assess how well you are grasping the materials as we move along.
- Summary Assessments
  - I do not want to include exams in the traditional sense. You will not be asked to memorize and regurgitate information. There will be periodic (3 or more times depending on the pace) summary assignments that assess your understanding of the material covered up to that point. These will contain a variety of tasks, some of which will include a short investigation and some general questions related to the material.

Each of these components for assessment are very crucial for learning and understanding the subject matter as well as demonstrating your understanding. Participation is the key and active participation is required to succeed in this course. I will be taking an active role in the course and you will find that I will post often to discussions in an attempt to help facilitate learning. I encourage you to check the discussions often and if you post a question make sure to check back for an answer within a reasonable amount of time.

Participation:
Participation will occur in various ways during the semester. You will participate as an individual, applying what you have learned, thinking about questions you have related to course materials and putting effort into finding answers to these questions. You will also participate in small and large groups. The small groups will be discussing various topics, sharing ideas and understanding with each other strengthening your understandings. You will also participate in class wide discussions testing your understanding of the material with others in the course. Important to remember... it is ok to be wrong. Make your observations and form your ideas for discussion. Everyone will not necessarily come to the same conclusions. You may find that instead of being right or wrong that you or others only have part of the picture but discussing your conclusions with each other will facilitate the completion of your understanding.
You should expect to participate as a student, asking questions, seeking understanding as well as acting in an instructive capacity by helping the other students with questions they might have for which you have some insight.
Discussions:
Consider discussions as “class time.” In a face to face course we would spend a considerable amount of the lecture time having a conversation about the material and investigations in the course. While discussion boards are sometimes a bit laggy in flow they are an important part of the learning environment. **If I am to help you out** (this is something I want to do) you need to let me know you need help. The discussion boards are a great place to seek help from myself or your peers. One function of the discussion boards will be to develop a conversation around our investigations. This allows everyone to receive feedback from each other an myself helping to ensure everyone is understanding the course content **before** the assignments are due.

Graded Discussions: The discussion boards will be graded on a 5 point scale based on the following criteria.

1. Did you participate in the discussion. Participation in the discussion means you read and respond to the conversation occurring. Just popping in and answering the discussion question is not participating. If I just wanted an answer to a question I would post it as an assignment. It is about developing to discussion topic. Remember your audience is the entire class. While I do not expect everyone to respond to every post I will be able to tell if you are participating based on your responses.

2. If you respond "I like this" or "i agree/disagree" that only shows that you have clicked the reply button. To participate you must give support. Why do you agree. Why do you disagree. This will show that you have indeed read the post you are replying to. Short replies are nice additives but you must also further, promote and/or provoke discussion. If you want to say “I like this” or similar that is fine but it will not count towards participation.

3. If you just come on an post 1 time (or 1 time for each question) you have not participated. You have put input in. If someone replies to your discussion post please read them and respond if need be. I again do not expect you to reply to every single post/response but you need to be involved. You do not necessarily need to answer the original questions. If you log in and half a doze people have answered the questions try adding to the conversation. Develop the answers and challenge the posts. When you have a discussion with your friends you do not all go around taking turns answering the question.

4. If you only answer questions and reply to only my posts or my responses you are not participating in a class discussion. Do not expect many points if any for this.

5. Minimal participation means you have at least answered the questions (or put meaningful alterations or input into other answers) read and responded to others posts as well as mine. This does not mean you need to do hundreds of posts. I would put a number (3 replies and rebuttals for example) but then I will likely see minimal always. **Minimal involvement = 3.5 points.** This can be done in a reasonable amount of time.

How much time and when do I work on an online course?
Throughout the semester, for any course you take, you should be thinking regularly about the topics. Let them bounce around inside your brain throughout the days and weeks of the semester. So the answer really is, you can never spend too much time but you certainly can spend too little time. **You must** set aside realistic blocks of time for the course. In a classroom setting this course would meet 3 hours a week with an expected 6-9 hours of time for studying/homework. Assignments and discussions will have** rigid **submission requirements and it is up to you to make the time to complete them.
How often should I log in?
This is NOT a weekend only course! Content will be delivered throughout the week on a regular basis. Tentatively this will occur on a Tuesday/Friday release schedule. You MUST (it is worthwhile) log into blackboard frequently!!! If you do not you will miss your opportunity to participate in discussions or obtain answers to questions too late for it to be useful. I will be monitoring the discussions and responding when necessary. Along with being involved in daily discussions I will be posting announcements, assignments, homeworks and other course related materials that may be time sensitive. As such it is your responsibility to make sure to check for any updates frequently. Along with updates I post, your classmates will be posting and responding to your posts. To facilitate meaningful discussions it is important that you are able to think about the posts and replies and respond in a reasonable time. I understand that there are a variety of reasons to take a course online with "flexible schedule" typically being one of them. To aid with the scheduling, the more time consuming assignments will be released close to the weekend to offer significant time to work on them and receive constructive feed back on questions, comments or related discussions. The secondary release day will generally involve follow up content, and supplementary material related to the previous release.

How is a two day release great news for me? Here is the icing on the cake. The more time consuming investigations will be released on a Friday and are due the following Thursday. If an investigation of this type is submitted early (Tuesday at 9AM) you will be able to resubmit the assignment after it has been graded for recovery of a percentage of the lost points. The exact percentage is to be determined but generally it is up to 50% of the points lost. This is to encourage people to get started on the assignments early so that questions can be asked in a timely manor as well as jump starting the related discussions.

Communication:
I will be in constant communication with you throughout the course. The methods of communication are as follows:

1. Announcements – I will be posting announcements throughout the course. Any time I post new material I will send an announcement. If I find there is something that needs to be brought to everyones immediate attention I will also send an announcement. Any announcements sent will result in an email being sent to your student email accounts. (This means you are required to check your student email or have it forwarded to an email of your preference using the following link (http://new.ipfw.edu/offices/its/kb/email/gmail/forwarding-student-email-to-another-address.html).

2. Email – From time to time I may send individual or class emails to notify student(s) of issues that may arise related to assignments. Again, you must check your email throughout the week.

3. Discussion Boards – I will be responding regularly to discussion posts. Along with this I will occasionally post in a discussion board called “Course Policy." Here I will answer questions and make comments related to course policy as the semester proceeds. These will be reminders and clarifications. You should check this board from time to time.

Blackboard Course Organization:
Primarily the course content will be delivered through Learning Modules. If you read all of the announcements and go through the items in the Learning Modules you will be able to find all of the content. Inside the learning modules you will find links to assignments, related discussion boards, videos, and any link related to the material. The first Learning Module for the course will be an
introduction to the course (yours and mine) along with a set of assignments designed to demonstrate the layout and expectations of the course.

**Course Topics Outline**
I am looking to cover the topics listed below. We may or may not get to each of these and there is the possibility that we will divert into other topics. Some of this will depend on your involvement in the discussions. If an interesting topic comes up that everyone has interest in perusing we can divert and investigate.

**Material Outline**
- **Topics of interest! (or interesting topics... many that we see all around us!)**
  1. The Nature of Science
  2. Motion, seen all around us!
  3. Forces, and their relationship to motion.
  4. Work (not the 9 to 5 kind... the physics sort of work) and Energy (easily defined?)
  5. Momentum, we hear it a lot but is often misconceived.
  6. And maybe a few others will sneak in if we have time!

**Grades**
Grades will be based on point accumulation. Assignments, discussion, summaries, etc will all have specific point values associated with them. The weighting on an assignment will be demonstrated by the total number of points it is worth. At the end of the semester your grade will be determined by the % of the total points you have accumulated. **Also** I will be looking at active learning participation based on your effort in assignments to develop understanding from observations as opposed to just answers to questions, and similarly your discussion posts are making an effort to gain understanding through inquiry I may award additional participation points (up to 5% of your current total) to your final point value.

**Most important!** If you have any questions feel free to ask. I hope everyone will be comfortable asking questions in discussions! You are of course free to drop me an email at anytime as well. I am always happy to hear constructive feedback (for better or for worse). My goal is to help you understand basic concepts in physics and if there is something I can do to help facilitate this more effectively I would love to know!

**Tentative!** If I need to make changes or add policies throughout the semester I will be letting everyone know. Keep in mind, any changes made will be made to improve the quality of your learning experience.

**Final Notes:**
There are a few other policy related items that I am not going to cover directly in the syllabus. The first set of assignments will be designed to get you comfortable with the Blackboard Learning environment, and go over assignment submission policy and guidelines (e.g. all assignments (very few exceptions) must be submitted in PDF form). These assignments will familiarize you with the location of course material along with an administrative content folder where I will maintain and update course policies.