Course Description: The Research in Bioinformatics course is designed to give students (Masters, Ph.D., and fellows) a foundation in general research approaches with specific application to bioinformatics and medical informatics. This is the second of a two-part course which will focus on developing the critical thinking and evaluation skills necessary to be successful in this field. The emphasis this term will be on executing an informatics project and preparing a Specific Aims page using the skills developed during the first part of the course.

*Course Meeting Time: There are two Fridays where there is no class (5/11/18 & 6/1/18). Since each of the other Fridays’ classes meet for 2 hrs and 20 minutes, there will be no loss of overall instructional time. See syllabus for full details.

Prerequisites: Acceptance into the DMICE bioinformatics track or instructor permission and completion of Bioinformatics 552A/652A.

Instructors:
Eilis Boudreau, M.D., Ph.D., boudreau@ohsu.edu
Deborah Woodcock, M.B.A. woodcocl@ohsu.edu

Office Hours: by appointment

**Texts:** The Grant Application Writer’s Workbook, available at http://www.grantcentral.com/workbook_nih_sf424_shortened.html

**Reading Material:** Relevant literature from the fields of biomedical research, bioinformatics, and computer science.

**COURSE GRADING POLICY:**
This course is given for a letter grade. The final grade will be based on 100 points. The number of points assigned to each activity is as follows: 35 points for your project management deliverables; 30 points for your Specific Aims page; 12.5 points for your AMIA project submission write-up (or equivalent if doing an alternate challenge); 12.5 points for your final project presentation; 10 points for your primary grant reviewer summary statement. All written assignments should be submitted through Sakai and grades for written assignments will be posted in Sakai two weeks after the assignment due date or completion of presentations (for assignments submitted late, grades will be posted two weeks after the assignment is submitted).
<table>
<thead>
<tr>
<th>Task</th>
<th>Points</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post in Project Management and term projects forum: Thesis project work plan (assigned during Winter term)</td>
<td>5</td>
<td>Thursday 4/5/18 @ 11:55 PM</td>
</tr>
<tr>
<td>Submit in Sakai: Term project team charter</td>
<td>5</td>
<td>Thursday 4/12/18 @ 11:55 PM</td>
</tr>
<tr>
<td>Email instructor a few sentences about topic for Specific Aims page</td>
<td>N/A</td>
<td>Friday 4/13/18 (10 AM)</td>
</tr>
<tr>
<td>Submit to Sakai: Draft term project charter/SOW, including problem statement and major milestones</td>
<td>5</td>
<td>Thursday 4/19/18 @ 11:55 PM</td>
</tr>
<tr>
<td>Submit to Sakai: Final term project charter and high-level project work plan</td>
<td>10</td>
<td>Thursday 4/26/18 @ 11:55 PM</td>
</tr>
<tr>
<td>Post near-final draft of Specific Aims page to Sakai Forum section</td>
<td>N/A</td>
<td>Friday 5/4/18 (10 AM)</td>
</tr>
<tr>
<td>Submit to Sakai your Final Specific Aims Page</td>
<td>30</td>
<td>Friday 5/11/18 (10 AM)</td>
</tr>
<tr>
<td>Post to Forum section of Sakai &amp; Submit your Final Specific Aims page &amp; your NIH Biosketch (tailored specifically to your SA page)</td>
<td>N/A</td>
<td>Friday 5/11/18 (10 AM)</td>
</tr>
<tr>
<td>Do primary grant review using your assigned SA page/NIH Biosketch; come prepared to class ready to lead discussion on your assigned SA page</td>
<td>N/A</td>
<td>In-class Friday 5/18/18 (you may not present until 5/25/18 but all reviewers must be prepared for possible review presentation by 5/18/18)</td>
</tr>
<tr>
<td>Submit to Sakai your Primary Reviewer Summary Statement</td>
<td>10</td>
<td>1 PM on the day after assigned in-class grant review completed (either Saturday 5/19/18 or 5/26/18 at 1 PM)</td>
</tr>
<tr>
<td>Submit to Sakai: Detailed project work plan</td>
<td>5</td>
<td>Thursday 5/24/18 @ 11:55 PM</td>
</tr>
<tr>
<td>Submit to Sakai: Final project presentation (copy of your slides and link to site where the beta version of your project can be accessed)</td>
<td>12.5</td>
<td>Friday 6/8/18 @ 10 AM</td>
</tr>
<tr>
<td>Present in class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit to Sakai: Final project write-up</td>
<td>12.5</td>
<td>Friday 6/15/18 @ 5 PM</td>
</tr>
<tr>
<td>Submit to Sakai: Project reflections</td>
<td>5</td>
<td>Friday 6/15/18 @ 5 PM</td>
</tr>
<tr>
<td>Final Class Grade</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**Late Submissions**
The assignments will be marked down by 1 point per day if you have not obtained prior permission to delay submission from the instructor. An assignment is considered late if submitted any time after the Sakai deadline. For example, if a written assignment is due at 10 AM and you submit it at 10:05 AM, you will lose 1 point. If the assignment still has not been submitted by the following day at 10 AM, you will lose another point. A one-point loss will continue to occur for each day late until the assignment has been submitted.

**Class Participation**
While you will have some lectures during the term, a significant amount of class time is devoted to interactive in-class exercises. Therefore, it is very important that you come to all class sessions on time. If for some reason you must miss a class, please let the instructor know in advance (or in the case of an emergency as soon as possible after the class is missed). In these cases, you may be given a make-up exercise if appropriate to do on your own. Repeated tardiness to class may also result in the loss of 1 point on your final grade for each class session for which you are late.
Grades are assigned based on the following criteria:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93-100</td>
</tr>
<tr>
<td>A-</td>
<td>90-92.99</td>
</tr>
<tr>
<td>B+</td>
<td>87-89.99</td>
</tr>
<tr>
<td>B</td>
<td>83-86.99</td>
</tr>
<tr>
<td>B-</td>
<td>80-82.99</td>
</tr>
<tr>
<td>C+</td>
<td>77-79.99</td>
</tr>
<tr>
<td>C</td>
<td>73-76.99</td>
</tr>
<tr>
<td>C-</td>
<td>70-72.99</td>
</tr>
<tr>
<td>F</td>
<td>&lt;70</td>
</tr>
</tbody>
</table>

Graduate Studies in the OHSU School of Medicine is committed to providing grades to students in a timely manner. Course instructors will provide students with information in writing at the beginning of each course that describes the grading policies and procedures including but not limited to evaluation criteria, expected time needed to grade individual student examinations and type of feedback they will provide.

Class grades are due to the Registrar by the Friday following the week of finals. However, on those occasions when a grade has not been submitted by the deadline, the following procedure shall be followed:

1) The Department¹ /Program Coordinator² will immediately contact the Instructor requesting the missing grade, with a copy to the Program Director and Registrar.
2) If the grade is still overdue by the end of next week, the Department¹ /Program Coordinator² will email the Department Chair directly, with a copy to the Instructor and Program Director requesting resolution of the missing grade.
3) If, after an additional week the grade is still outstanding, the student or Department¹ /Program Coordinator² may petition the Office of Graduate students for final resolution.

1 For courses that are run by a specific department.
2 For the conjoined courses (course number is preceded by CON_ that are run by Graduate Studies.

COPYRIGHT INFORMATION:
Every reasonable effort has been made to protect the copyright requirements of materials used in this course. Class participants are warned not to copy, audio, or videotape in violation of copyright laws. Journal articles will be kept on reserve at the library or online for student access. Copyright law does allow for making one personal copy of each article from the original article. This limit also applies to electronic sources.

To comply with the fair use doctrine of the US copyright law, Sakai course sites close three weeks after grades are posted with the Registrar. Please be sure to download all course material you wish to keep before this time as you will have no further access to your courses.
DMICE COMMUNICATION POLICY

1. If the syllabus directs the student to contact the TA before contacting the instructor, the student should do so. Otherwise, the student should contact the instructor and allow 2 business days (not including weekends) for a response.

2. If the student does not receive a response from the instructor within 2 business days, s/he should contact the TA (if there is one). When contacting the TA s/he should cc the instructor and Diane Doctor at doctord@ohsu.edu.

3. If a student does not receive a response from the TA within 1 business day (not including weekends), s/he should contact Diane Doctor at doctord@ohsu.edu and cc the instructor and the TA.

4. If Diane does not reply within 1 business day (not including weekends), the student should contact Andrea Ilg at ilgan@ohsu.edu.

5. Students having difficulties with Sakai should contact the Sakai Help Desk at sakai@ohsu.edu or at (877) 972-5249. Sakai help is available M-F from 8am to 10-pm and weekends from Noon to 5pm. Do not contact the instructor.

6. Please use professional etiquette when communicating with peers and the instructor. This means avoiding aggressive or offensive language, showing respect for others’ opinions and positions, and conducting yourself as if you were face to face with them. Please pay special attention to etiquette in class forums and when using email. If you notice someone violating this policy, please make the instructor and TA aware of the problem.

STUDENT ACCESS:
OHSU is committed to providing equal access to qualified students who experience a disability in compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, and the ADA Amendments Act (ADA-AA) of 2008. If you have a disability or think you may have a disability (physical, sensory, chronic health, psychological or learning) please contact the Office for Student Access at (503) 494-0082 or studentaccess@ohsu.edu to discuss eligibility for academic accommodations. Information is also available at www.ohsu.edu/student-access. Because accommodations may take time to implement and cannot be applied retroactively, it is important to have this discussion as soon as possible. All information regarding a student’s disability is kept in accordance with relevant state and federal laws.

COMMITMENT TO EQUITY AND INCLUSION
Oregon Health & Science University is committed to creating and fostering a learning and working environment based on open communication and mutual respect. If you encounter sexual harassment, sexual misconduct, sexual assault, or discrimination based on race, color, religion, age, national origin or ancestry, veteran or military status, sex, marital status, pregnancy or parenting status, sexual orientation, gender identity, disability or any other protected status please contact the Affirmative Action and Equal Opportunity Department at 503-494-5148 or aaeo@ohsu.edu. Inquiries about Title IX compliance or sex/gender discrimination and harassment may be directed to the OHSU Title IX Coordinator at 503-494-0258 or titleix@ohsu.edu

ACADEMIC HONESTY:
Course participants are expected to maintain academic honesty in their course work. Participants should refrain from seeking past published solutions to any assignments. Literature and resources (including Internet resources) employed in fulfilling assignments must be cited. See [http://www.ohsu.edu/xd/education/library/research-assistance/plagiarism.cfm?WT.rank=1#](http://www.ohsu.edu/xd/education/library/research-assistance/plagiarism.cfm?WT.rank=1#) for information on code of conduct for OHSU and [http://www.ohsu.edu/xd/education/teaching-and-learning-center/for-students/index.cfm](http://www.ohsu.edu/xd/education/teaching-and-learning-center/for-students/index.cfm) for more information on citing sources and recognizing plagiarism.

In an effort to uphold the principles and practice of academic honesty, faculty members at OHSU may use originality checking systems such as Turnitin to compare a student’s submitted work against multiple sources.

To protect student privacy in this process, it will be necessary to remove all personal information, i.e. student name, email address, student u-number, or any other personal information, from documents BEFORE submission.

**NOTE:**
This syllabus and class schedule is subject to changes by the instructors. Changes will be made with as much advance notice as possible.

**COURSE COORDINATION:**
The course Website will be the central location for the distribution of course materials and assignment listing. For any technical questions or if you need help logging in, please contact the Sakai Help Desk.

Hours: Sakai Help Desk is available Mon – Fri, 8 am – 9 pm and weekends 12 pm – 5 pm, Pacific Time.
Contact Information:
(Toll-free) 877-972-5249
(Web) [http://atech.ohsu.edu/help](http://atech.ohsu.edu/help)
(Email) sakai@ohsu.edu

**COURSE OBJECTIVES:**
- If presented with a research idea, be able to identify informatics issues relevant to the problem and be able to develop and articulate appropriate approaches to finding solutions to these problems.
- Critically develop a research idea (hypothesis), and complete a Specific Aims page which outlines an approach to testing this hypothesis.
- Develop and execute an informatics project plan and complete a project for a design challenge.
- Understand how a grant proposal is prepared and evaluated.

**COURSE OUTLINE:**

**Week 1 (4/6/18; room 123/124)**
- Introduction to grant writing
- Project kick-off, work in small groups

**Week 1 Assignments:**

1. Post your thesis project work plan (assigned during Winter term) in the Thesis project work plan forum on Sakai by **Thursday 4/5/18 at 11:55 PM.**

2. Identify a topic for your specific aims page. This can be written on a topic related to your project or another area of your choosing. Some students may choose to do it on a topic related to their research. Send a brief email with a few sentences outlining your chosen topic to the instructor (boudreau@ohsu.edu) by **Friday 4/13/18 at 10 AM.**

3. Convene your project team and develop a team charter for your project. The team charter should clearly identify how each project team member will individually contribute to the completion of the project. You’ll create this document as a group, but each team member should submit a copy of the files in Sakai by **Thursday 4/19/18 at 11:55 PM.** All members of the team should review and agree upon this file prior to submission.

**Week 2 (4/13/18; room 124):**
- Introduction to the Institutional Research Board (IRB) and Institutional Animal Care and Use Committee (IACUC)

**Week 2 Assignment:**

1. Convene your project team, define your project, and begin to draft your project charter/SOW. Your charter/SOW should include deliverables, key milestones, and as much detail as you can provide, based on your initial understanding of the project. You’ll create this document as a group, but each team member should submit a copy of the files in Sakai by **Thursday 4/19/18 at 11:55 PM.** All members of the team should review and agree upon this file prior to submission.

2. Continue work on Specific Aims page.

**Week 3 (4/20/18; room 124):**
- Project Management: Executing and Closing the Project – Deb Woodcock

**Week 3 Assignment:**

1. Convene your project team to 1) finalize your project charter and 2) develop a high-level work plan for your project. Your plan should be based on your charter, and include deliverables, key milestones, and as much detail as you can provide, based on your initial understanding of the project. You’ll create these documents as a group, but each team member should submit a copy of the files in Sakai by **Thursday 4/26/18 at 11:55 PM.** All members of the team should review and agree upon these files prior to submission.

2. Continue work on Specific Aims page.

**Week 4 (4/27/18; room 123/124):**
- The NIH Grant Review Process
- 5 min. project updates

**Week 4 Assignment:**
Update your project work plan and continue executing the tasks in the work plan.

Week 5 (5/5/17):
- Specific Aims page review

Week 5 Assignment:
(1) Update your project work plan and continue executing the tasks in the work plan.
(2) Continue work on Specific Aims page.
(3) You need to submit a copy of your near final draft Specific Aims page to the Forums section on Sakai by Friday 5/4/18 at 10 AM. You will be using this draft for the in-class exercise. Based on the feedback you get in class, you will be able to make corrections and then submit your final Specific Aims page to Sakai by Friday 5/11/18 at 10 AM. In addition to submitting to Sakai, please also submit a copy of your FINAL Specific Aims page plus NIH Biosketch to Sakai on the Forum’s page for the class by Friday 5/11/18 at 10 AM. Each class member will be assigned to be the primary reviewer for one Specific Aims page for our Mock Grant reviews. You will be able to download your assigned Specific Aims page and NIH Biosketch from the Forum’s section of Sakai. Reviewer assignments will be made in class on 5/5/4/18.

Week 6 (5/11/18; room 123/124): No Class

Week 6 Assignment:
(1) Refine your work plan and continue executing the tasks in the work plan.

Week 7 (5/18/18; room 123/124):
- Mock Grant Reviews

Week 7 Assignment:
(1) Update your work plan and continue executing the tasks in the work plan. Submit your current work plan to Sakai by Thursday, 5/24/18 at 11:55 PM. This plan should show additional detail relative to the high-level plan you submitted in Week 3, as well as significant completion of tasks and deliverables.
(2) If you were a primary reviewer for a grant reviewed in-class, then your primary reviewer summary statement is due for submission to Sakai by Saturday 5/19/18 at 1 PM.

Week 8 (5/25/18; room 124):
- Mock Grant Reviews continue

Week 9 Assignment:
(1) Update your work plan and continue executing the tasks in the work plan.
(2) If you were a primary reviewer for a grant reviewed in-class, then your primary reviewer summary statement is due for submission to Sakai by Saturday 5/26/18 at 1 PM.
(3) Prepare for Project Presentations, which will be done on **Friday 6/8/18**. Each group will do a project presentation. The focus should be on the problem/gap your project addressed and what your solution was. Each member of the team is expected to do part of the presentation. Each member of the team may use 1-slide or graphic, with the total time for the group presentation being **6 min**. **You must demo a working version of your project during the presentation**. You will be graded on the clarity of your presentation and slide, demonstrating that you at least have a working beta version of your product, how well you stick to the time-limit, and how well your presentations coordinate with your team members’ presentations. In general, each team member should do an equal part of the presentation. Each group project presentation will be videoed and we will play back the video in class immediately after each group presentation. This exercise is designed so that you can get constructive feedback on your presentations.

**Week 9 (6/2/16; room 123/124): No class.**

**Week 9 Assignment:**
(1) Continue work on your final project write-ups, which will be due on **Friday 6/16/17 at 5 PM**. Each team member will submit a copy of their group project write-up. The format of this write-up should be in accordance with the published format for the AMIA or other chosen design challenge. In addition to the group write-up, each member of the group should add 2-3 paragraphs at the end of the document outlining their specific contributions to the group project. These statements should be reviewed by all members of the group prior to submission.

**Week 10 (6/8/18; room 123/124):**
- Spring project presentations

**Week 10 Assignment:**
(1) Submit your project presentation slides and a link to your demo-able final project deliverable by **Friday, 6/8/18 at 10 AM**.
(2) Continue work on your final project write-ups, which will be due on **Friday 6/15/18 at 10 AM**.

**Week 11 (6/15/18)**
- No class
- Spring project write-ups due
- Project reflections due

**Week 11 Assignment:**
(1) Submit your final project write-ups by **Friday 6/15/18 at 10 AM**.
(2) Submit your project reflections by **Friday 6/15/18 at 10 AM**.