

Biology 78 w20 Molecular Mysteries of Human Biology

Lectures: Monday, Wednesday & Friday 8:50-9:55 **X-hour:** Thursday 9:05-9:55

Text/Reading:

1. **Recommended text:** Any biochemistry text (e.g. Voet, Voet & Pratt, Berg, Tymoczko & Stryer, or Garrett & Grisham) may provide important background information.
2. **Course Readings:** 16 research manuscripts that are required course reading are on web site. Additional background information (also required) and helpful reviews (optional) for each topic posted as .pdfs or links on web site OR available in Dana Biomedical Library, the former in textbooks.

Course Web Site: <http://canvas.dartmouth.edu>

Date	Topic	Prob Set Posted	Prob Set Due
Watch on Sunday, January 5	Video: The Hidden Epidemic: Heart Disease in America		
Mon, Jan 6	Atherosclerosis: The Loch Ness Monster and John Hunter's Ossified Arteries		
Wed, Jan 8	Plasma Lipoproteins: The Legacies of Michel-Eugène Chevrueil and Mona Lisa		
Thurs, Jan 9 X-Hour	Dr. John Butterly: A Patient with Atherosclerosis		
Fri, Jan 10	Readings: Schoenheimer Effect Explained: Cholesterol Regulates Itself		
Mon, Jan 13	Readings: Hepatic Steatosis, PCSK9 Induction and LDL Receptor Expression	#1	
Wed, Jan 15	NO CLASS		
Thurs, Jan 16 X-Hour	NO CLASS		
Fri, Jan 17	Otto Warburg and the Mysterians: Metabolism in Cancer Cells		#1
Mon, Jan 20	NO CLASS: MLK Day		
Wed, Jan 22	Readings: Fructose Metabolism Drives Colon Cancer Metastasis in Liver		
Thurs, Jan 23 X-Hour; 8:50 start	Readings: CyclinD3-CDK6 Complex Regulates Metabolism in Cancer	#2	
Fri, Jan 24	Cachexia: Agostino Levanzin, the Irish Republican Army and Steve Jobs		
Mon, Jan 27	Readings: Modeling Human Cancer-Induced Cachexia		#2
Wed, Jan 29	Readings: Skeletal Muscle Loss in Lung Cancer	#3	
Thurs, Jan 30 X-hour	NO CLASS		
Fri, Jan 31	Bathsheba's Breast: Hendrickje Stoffels, Anne of Austria, Susan Sontag and Jill Ireland		
Mon, Feb 3	Readings: Fatty Acid Oxidation & Breast Cancer Stem Cell Renewal		#3
Wed, Feb 5	Readings: Phosphocreatine Energy Shuttle: Druggable Target in Her2+ Breast Cancer	#4	
Thurs, Feb 6 X-hour 8:50 start	Exercise: Sled Dogs, Toadfish, Frogs, Geese, Bats & Lance Armstrong		
Fri, Feb 7	NO CLASS: Carnival		
Mon, Feb 10	Readings: Daily Variance in Exercise Capacity		#4
Wed, Feb 12	Readings: PPARdelta and Promotion of Exercise Endurance	#5	
Thurs, Feb 13 X-hour	NO CLASS		
Fri, Feb 14	Diabetes Mellitus: Paul Cezanne's Vision and Shirley Horn's Feet		
Mon, Feb 17	Readings: CaMKII, O-linked Glycosylation and Cardiac Disease		#5
Wed, Feb 19	Readings: VEGF-B Signaling and Diabetic Nephropathy	#6	
Thurs, Feb 20 X-hour	Dr. Richard Comi: Patient with Type 1 Diabetes Mellitus		
Watch on Thurs, Feb 20	Video: The Forgetting: A Portrait of Alzheimer's Disease		
Fri, Feb 21	Alois Alzheimer and Auguste D: Sailing Into Darkness		
Mon, Feb 24	Readings: Modeling Alzheimer's Disease <i>In Vitro</i>		#6
Mon, Feb 24, evening	Movie/Dinner/Discussion with Dr. Robert Santulli: Iris: A Tale of Iris Murdoch		
Wed, Feb 26	Readings: apoE4 and Tau in Neurodegeneration		
Thurs, Feb 27 X-hour	NO CLASS		
Fri, Feb 28	Aging: In Vino Veritas: Luigi Cornaro & <i>Discorsi della Vita Sobria</i>		
Mon, Mar 2	Readings: Reversing NAD+ Decline in Aging		
Wed, March 4	Readings: Alternate Day Fasting & Molecular Markers of Aging	#7**	
Thurs, March 5 X-Hour	NO CLASS		
Fri, March 6	NO CLASS		
Wed, Mar 11			#7**

**Problem set #7 covers both Alzheimer's and Aging

Biology 78 Course Format & Expectations

Course Goals and Format

Knowledge of molecular mechanisms allows new approaches to understanding human biology and disease. This course will explore the normal and abnormal biology of several human conditions relying on biochemistry, molecular genetics, and physiology as tools of inquiry. Examples will be drawn from the histories of Mona Lisa, Michel-Eugène Chevreul, Otto Warburg, Steve Jobs, Hendrickje Stöffels, Bobby Sands, Paul Cézanne, Lance Armstrong, Auguste D and Luigi Cornaro, among others.

The class topics are organized in blocks of approximately one week, the introduction of which will begin with a lecture by Professor Witters who will discuss an area of normal or abnormal human biology to be investigated. He will include information on the relevant physiology/pathophysiology and basic biochemical & molecular background to set the context for further discussions. In the following two classes, the assigned reading will be discussed. Students (in groups of 2) assigned to each topic/paper (see below) will analyse, critique and present the paper to which s/he is assigned (Professor Witters will do any unassigned papers). **For each of these classes, ALL students will be expected to have read the background & research papers AND to participate in the discussion.** Some review papers on the course web site are also valuable in setting the context and will provide supplementary information to assist students in their preparation of their paper presentations. Following the final presentation within each topic, students must complete a to-be-graded written assignment based on a problem/issue raised by one/both of the papers/topic. *These assignments will be due as indicated on the course schedule and can be completed in an open-book format with full consultation with any source of information, including others in the class (see below).*

Throughout the course, it will be important to put a human face/context to the biochemical/molecular events we are studying, illustrating the “life” experience where biology is normal or abnormal. We will hope to achieve this aim in several ways. The background reading is a very important complement to the molecular details. In some class meetings, we will have a guest physician accompanied by a patient dealing with one of the topics under discussion. We will preview two of the course blocks with out-of-class viewing of videos that will help introduce or amplify some of these topics. Lastly, we will also have one special evening dinner/discussion with a Geisel faculty member while viewing a movie relating to Alzheimer’s disease.

Expectations and Grading

Expectations for and grading of students consists of several elements. **Students are expected to attend class (arriving on time), to have done the reading and to complete all assignments on time unless the reasons for the lateness/absence have been discussed with Professor Witters in advance. In general, the only possible excuses for lateness will be illness or unavoidable absence from campus (e.g. job or grad school interview, athletic trip, etc with PRIOR approval from him).**

- A **25% deduction in grade** will be assigned for each day any assignment is late.
- **Again, students are expected to communicate with Professor Witters in advance about any possible deviation from submission of assignments on time.**

It is possible to accumulate **100 points** in the course in 3 ways **anticipating the median grade to be A/B⁺**.

- **(50% of grade; 10% for each submitted) Seven (7) problem assignments, each worth 10 points**, will be distributed during the term. Each student must complete five (5) of these, excluding the problem on the topic of their assigned paper discussion and one other of their choosing (the latter declared in advance). Each problem will relate to an aspect of the assigned

reading/topic; answers are limited to two typewritten pages. **In 2019, grades ranged 6-9.75 points (for each set).** *The distribution and due dates are indicated on the right of the course schedule and on the Canvas course calendar.*

- **(30% of grade; 30 points) Preparation and presentation of an assigned paper.** Each student (in groups of 2) will be expected to prepare a scholarly presentation that provides some background on the topic, an exposition and review of the data and the methodology of the paper under review and a critique of the paper's findings and conclusions. In addition, a short "hot topic" that extends the information beyond the assigned paper should be included. Each presentation should be accompanied by a PP set, including a bibliography. **In 2019, grades ranged from 25-30 points.** *More details below.*
- **(20% of grade; 20 points) Engagement of and participation in class discussions and analysis of reading** through thoughtful questions and comment will be an important part of the grading. Participation is the key word, not whether the student is "right or wrong". Evidence that student has read/prepared for each discussion will also be sought for. Other "evidence" of participation will include the use of office hours and use of the Piazza section on the course web site for thoughtful questions, comments or postings. **In 2019, grades ranged from 15-20 points.**
- There is **no final exam or paper** in this course.

Course Materials

The **course readings** are included as .pdfs on the web site, as well as pertinent review articles that may be of value in preparing paper presentations. **External links** to all the research manuscripts are also included, which can be value in viewing paper in color and in examination of supplemental data.

A **biochemistry text**, either Berg, Tymoczko & Stryer, Biochemistry or Voet, Voet & Pratt, Biochemistry or Garrett & Grisham might be very valuable in the review of material and preparation of presentations.

The **course web site** is on Canvas (<http://canvas.dartmouth.edu>) where readings, Powerpoint slides, lecture captures (see below), web links, Q&A module (Piazza) and other limited access materials will be maintained.

Technologic snafus aside, we will be doing **lecture captures** of class sessions using the Echo360 technology in our classroom this term. While I do NOT regard this as a substitute for class attendance, it might be helpful for several of you if you have an unavoidable absence from class or would simply like to review aspects of a lecture or discussion (you can start and stop me!). Historically, many students have found these useful as a course study adjunct. However, there are things we do in class that may not be easily captured with these technologies (especially classroom discussions).

Other Course Issues

Office Hours: Students are very much encouraged to utilize office hours for discussion and questions and to work on their assigned presentations. I enjoy getting to know you all well and to work with you on course material, "life after Dartmouth", things you are up to, etc. **Discussing your topic/paper for your class**

presentation is especially encouraged. A schedule of office hours will be posted for each week. Students are also encouraged to utilize the **Piazza** section of the Canvas site. By posting questions (and having public answers), everyone in the class benefits. Students can also use this Piazza section to post interesting articles or web links to information they encounter during the course. **A map to his office in the Class of 1978 Life Sciences Center is included at end of this syllabus and posted on the Canvas site.**

X-hours/Class Schedule: We will use some of the X-hours as indicated on the course schedule for a lecture, paper presentation, or physician/patient visit. **On the Thursdays when used for lecture or paper presentation, class will begin at 8:50 am, not 9:05 am, to allow sufficient time.** There are several days, including MLK Day, that we will NOT hold class; consult the schedule for these dates.

Course Accommodations: Students with **disabilities**, including chronic diseases, learning disabilities, and psychiatric disabilities are encouraged to discuss with me appropriate accommodations that might be helpful. **Please do this EARLY in the course. If Student Accessibility Services (SAS) has authorized services, students MUST show me at the beginning of the course the originally signed SAS Services and Consent Form and/or a letter on SAS letterhead to me. Any requested deviation from course deadlines MUST be sought in advance of the deadline date irrespective of the authorized accommodations.**

Religious Observances: Some students may wish to take part in religious observances during the term. If you have such a conflict, please come and discuss with me, so we can make appropriate arrangements.

Your Mental Health: I recognize that the academic environment at Dartmouth is challenging, that our terms are intensive, and that classes are not the only demanding part of your life. There are a number of resources available to you on campus to support your wellness, including: your undergraduate dean (<http://www.dartmouth.edu/~upperde/>), Counseling and Human Development (<http://www.dartmouth.edu/~chd/>), and the Student Wellness Center (<http://www.dartmouth.edu/~healthed/>). I encourage you to use these resources and come speak with me to help take care of yourself throughout the term.

Our Community: At Dartmouth, I/we value integrity, responsibility, and respect for the rights and interests of others, all central to our Principles of Community. I/we are dedicated to establishing and maintaining a safe and inclusive campus where all have equal access to the educational and employment opportunities Dartmouth offers. I/we strive to promote an environment of sexual respect, safety, and well-being. In its policies and standards, Dartmouth demonstrates unequivocally that sexual assault, gender-based harassment, domestic violence, dating violence, and stalking are not tolerated in our community.

The Sexual Respect Website (sexual-respect.dartmouth.edu) provides a wealth of information on your rights and obligations with regard to sexual respect and resources that are available to all in our community. **As a faculty member, I am obligated to share disclosures made to me regarding conduct under Title IX with Dartmouth's Title IX Coordinator.** Confidential resources are also available, and include licensed medical or counseling professionals (e.g., a licensed psychologist), staff members of organizations recognized as rape crisis centers under state law (such as WISE), and ordained clergy. Should you have any questions, please feel free to contact Dartmouth's Title IX Coordinator (Kristi.Clemens@Dartmouth.edu) (and deputies if appropriate).

Preparation of Assignments and the Dartmouth Academic Honor Principle: The Dartmouth College Student Handbook states: "Fundamental to the principle of independent learning are the requirements of honesty and integrity in the performance of academic assignments, both in the

classroom and outside. Dartmouth operates on the principle of academic honor, without proctoring of examinations. Students who submit work which is not their own or who commit other acts of academic dishonesty forfeit the opportunity to continue at Dartmouth." Students are responsible for the information concerning plagiarism and proper citation found at <https://student-affairs.dartmouth.edu/policy/academic-honor-principle>. Some specific issues about adherence to the Honor Principle for your assigned paper and the problem sets follows:

- **Assigned paper presentations (more details below)** For completion of this Biology 78 assignment, students are free to consult other sources of information, but ALL THESE SOURCES must be documented in a bibliography. Possible sources include classmates, other non-class students, textbooks and the biomedical literature. INTERNET RESOURCES (as URLs) ARE NOT ACCEPTABLE AS THE SOLE SOURCES OF INFORMATION; STUDENTS ARE EXPECTED TO USE STANDARD TEXTBOOKS AND THE BIOMEDICAL LITERATURE (You are free to use the Internet, of course, to identify these primary sources, but must consult them directly). *All presentation materials (PP, other documents) must be passed onto Professor Witters for posting on the course web site the same day as the presentation.*
- **Problem sets (more details below)** Seven (7) problem sets will be distributed, each on the final class day of each of the topic to be covered. Students must complete and submit five (5) of these. One is automatically excluded for each student, namely the one on the topic they presented. Students should then choose one other for exclusion, declared in advance of the distribution of the problem.

Class students are encouraged to work together in discussing and researching the assignments, but everyone is expected to INDEPENDENTLY PREPARE their written answer. You will be required to list the names of the students you worked with on the problem sets. However, students MAY NOT consult with the students who prepared presentations about that particular topic. The completed assignments by individuals who discuss the assignment may reflect ideas developed by them together, but each student must phrase their assignment answer in their own words and acknowledge the "helpful discussions" with their collaborators in the bibliography. **Therefore DO NOT share the computer files for your written answers (in draft or final form)!** For completion of this Biology 78 assignment, students are free to consult other sources of information, but ALL THESE SOURCES must be documented in a bibliography. **In general, the problem sets can be answered entirely based on information that has been communicated in class and outside references are not necessary (and, in some instances, could confuse).**

Some Specifics Regarding the Paper & Critique Assignments and Problem Sets

Paper Assignment

After the first class, students will rank all 8 of the course topics in order of preference (1-8) and will then be assigned to a specific paper based on these preferences. You will want to peruse the course schedule & the spreadsheet at end of this syllabus for the presentation dates (and the dates that problem sets are assigned and due (this might influence your choices)). Professor Witters will be doing the first presentation to provide a model of presentation format and will also “fill in as needed” on other topics. Choices are:

1. Atherosclerosis
2. Metabolism in Cancer Cells
3. Cachexia
4. Breast Cancer
5. Exercise
6. Complications of Diabetes Mellitus
7. Alzheimer's Disease
8. Aging

Every effort will be made to give students one of their top choices. **After assignment, students will have 24 hours in which to “swap” with someone else, but must inform Professor Witters of the switch.**

Students will be assigned in groups of two to one paper. Each student group is to prepare a scholarly 45 min (~20+ min per student) presentation using Powerpoint (and a handout (optional)) and a bibliography of any additional readings beyond that provided in class. This time leaves ~20 minutes for additional discussion/questions. For completion of all Biology 78 assignments (problem sets, class presentations), students are free to consult other sources of information, but ALL THESE SOURCES must be documented in a bibliography. Possible sources include classmates, other non-class students, Professor Witters/other faculty, textbooks and the biomedical literature. INTERNET RESOURCES (as URLs) ARE **NOT** ACCEPTABLE AS SOLE SOURCES OF INFORMATION; STUDENTS ARE EXPECTED TO USE STANDARD TEXTBOOKS AND THE BIOMEDICAL LITERATURE (You are free to use the Internet, of course, to identify these primary sources, but must consult them directly). *All presentation materials (PP, other documents) must be passed onto Professor Witters for posting on the course web site the same day as the presentation.*

The presentation should include the **following FIVE elements**:

1. A **brief background** on the biology (or clinical issues) of the relevant topic addressed by the paper
2. **Presentation of the important data** displayed in the paper (it is not necessary to present ALL the data; attention should be paid to the data which supports the major experimental conclusions). *Indeed, your ability to identify which are the key data is part of your grade!* When presenting the data, the figure from the text should be shown where applicable and the experimental technique(s) used to generate the data briefly explained. The data presentation should include any critique about the techniques used or conclusions drawn about any of the data sets. **Each student group will be given all the main figures (as .jpg files) from the assigned paper to assist in their preparation. Supplemental data to many of the papers can be linked to from the Canvas site.**
3. A **summary and critique of the major conclusions** of the paper and the ramifications of the study in terms of future research and comment about the “mystery” solved!
4. A **brief highlighting of a 2nd recent paper the group finds on the same topic.** This ‘hot topic’ paper should add an extra dimension to the specific area under discussion in the primary paper (Professor Witters may suggest some ideas to you, but you are expected to look on your own (e.g. PubMed) to find a “hot and

recent” (i.e. within the last 2-3 years) addition to the literature on the specific topic you are reporting on in your primary paper).

5. **Engagement of the rest of the class** through provocative or interesting questions. This is a crucial (and “graded”) element of the presentation. The questions should be analytical and thought-provoking, not just regurgitative of what everyone has read or can see (i.e. not “softball”). Asking classmates to interpret data, to provide alternative explanations for conclusions, to critique the information presented and to synthesize different pieces of data are all examples of the kinds of engagement that should be elicited by the presenters.

Other important points about presentations:

1. The time limit of ~45 minutes allows sufficient time for Q&A and discussion, so rehearsal of the presentation is **STRONGLY ENCOURAGED**.
2. Students will be informed of their grade shortly after the class presentation. Thirty (30) course points are assigned to this presentation. For simple completion of the assignment, 24 points would be the expected grade; more (or fewer) points will be awarded depending on the quality of the presentation and the effort of the presenters to engage the rest of the class.
3. Powerpoint slides are a useful way to illustrate key points, and these sets will be distributed to all class members via the web site after the presentation. Professor Witters will give each student group the main figures from the paper as .jpg files. There are several guidelines regarding the use and preparation of PP slides in your presentation.
 - a. **Plan about 30-40 total slides.** Your “hot topic” should only occupy 2-3 slides.
 - b. PP slides are best used to display images and to “bullet” key points. Keep font size large and avoid putting too much text on one slide. Large figures with many panels should be “broken up” and presented in parts of clarity and readability. **AVOID** reading your slides to the class. **REHEARSE!!** Use your presentation to amplify your bullet points and to review an image, figure, graph or table. Highlighting (by animation, arrows, boxes, call-outs, etc) key points in the data helps draw focus. The best slides have a declarative title at the top that states succinctly what the slide is trying to illustrate (example: ‘PCSK9 Diminishes Expression of the LDL receptor’ is the title on a slide that has a graph containing these data). Adding questions to the slides (unanswered) for the class is a good way to initiate discussion. *A summary slide is always a good way to end (and to start)! “Roadmap” slides are also useful to inform the class what the flow of information will be. BE CREATIVE!*
 - c. Some students will want to use **their own laptops**. Check with me in advance to make sure you have the correct attachments or settings. Alternatively, the **desktop computer in our classroom is a Mac with Microsoft Office 2016 installed**; you should preview your slides on a similar computer/application if you plan to use the desktop. Many students groups will create their PP set as a Google document. PP sets can be reformatted in moving between different versions of Powerpoint and between PCs and Macs. If you want to include sound or movie files, you will not be able to simply be able to e-mail the file to yourself. See Professor Witters for help with this in advance of your presentation.
 - d. All slide sets should contain one slide as your critique and one with your bibliography. The “hot topic” should just be a few slides, recognizing that no one else in the class will have read the paper, so maybe 2-3 data slides and a summary is sufficient.
 - e. Each student group should e-mail their PP set (**as a .pptx, not .pdf file**) to Professor Witters after completion of the presentation for posting on the web site.

I really want to work with all students to help you in the construction of a high-quality presentation. In the past, this has generally involved two (2) meetings, one to go over any questions you have about your paper after an initial reading and for me to review a few presentation points

and a second meeting (often the day before a presentation) to preview your PP slides, so I can offer suggestions. Contact me at an early date to arrange.

Written Problem sets

Seven (7) problem sets requiring submission of a written answer will be distributed during the term. They will be posted on-line at the end of each course topic and **are due by 10 AM on the dates indicated** (see the course schedule indicating the distribution and due dates). They **MUST BE SUBMITTED in two formats**. **First**, a **print version** MUST be submitted in class or at Professor Witters' office (there is a 'Biology 78 Drop Box' adjacent to his office). **Second**, an **electronic version** MUST be submitted through the Canvas web site at the same deadline. Any deviation from the announced deadlines **MUST** be sought in advance. A 25% reduction in grade per late day will be strictly enforced unless **prior permission for late submission** has been granted by communication with me.

Students must complete and submit five (5) of these. One is automatically excluded for each student, namely the one on the topic they presented. The second to be excluded should be made known to Professor Witters in advance of the distribution of the problem.

Students are encouraged to work together in discussing and researching the assignments, but everyone is expected to INDEPENDENTLY PREPARE their written answer. **You will be required to list the names of the students you worked with on the problem sets. However, students MAY NOT consult with the students who prepared a presentation on that particular topic.** The completed assignments by two or more individuals who had discussed the assignment may reflect ideas developed by together, but each student must phrase their assignment in their own words and acknowledge the "helpful discussions" with their collaborators in the bibliography. **Therefore DO NOT share the computer files for your written answers (in draft or final form)!**

For completion of all Biology 78 problem sets, students are free to consult other sources of information, but ALL THESE SOURCES must be documented in a bibliography. Possible sources include classmates (see **exception in above paragraph**), other non-class students, textbooks and the biomedical literature. INTERNET RESOURCES (as URLs) ARE **NOT ACCEPTABLE AS THE SOLE SOURCES OF INFORMATION; STUDENTS ARE EXPECTED TO USE STANDARD TEXTBOOKS AND THE BIOMEDICAL LITERATURE** (You are free to use the Internet (e.g. PubMed), of course, to identify these primary sources, but must consult them directly). **In general, the problem sets can be answered entirely based on information that has been communicated in class and outside references are not necessary (and, in some instances, could confuse).**

The assignment is limited to **2 pages (12 font), exclusive of a bibliography, which will constitute a 3rd page (and should also list the names of the other students you consulted with about the problem).** **The margins should be the same as those on the problem set.** Problem sets will be graded not only on the "correctness" of the answer, but the succinctness & clarity of the explanation and the perceived effort in creating a first-class scholarly document. Where appropriate, tables are a good way to display some answers. *I will also be grading these answers for the **quality of the expository writing**, including spelling, syntax, sentence structure, punctuation and organization.*

Course Resources

Dana Library Reserve Books

Voet, D ,Voet, JG and Pratt, CW, Fundamentals of Biochemistry, 5th Edition, John Wiley & Sons, Inc., 2016

Berg, JM, Tymoczko, JL and Stryer, L, Biochemistry, 7th edition, WH Freeman, 2012

Garrett, RH & Grisham, CM, Biochemistry, Brooks Cole, Cengage Learning, 2013

Olson, JS, *Bathsheba's Breast: Women, Cancer and History*, Johns Hopkins University Press, 2002

Frayn, KN, *Metabolic Regulation: A Human Perspective*, Wiley-Blackwell, 2010

Parker, DM and Mark, R (eds), *Reflections On A Life with Diabetes: a memoir in many voices*, Virtualbookworm.com Publishing, 2004

Bayley, John (1999) *Elegy for Iris*, St. Martin's Press, New York

E-Books

An extensive list of E-books that includes basic textbooks in many of the medical disciplines can be viewed at:

<http://www.dartmouth.edu/~library/biomed/resources/ebooks.html>

There is a link to this site on the 'Web Links' page of the Canvas site

Course Web Site

Course materials (schedules, Powerpoint slides, all readings, Echo360 recordings, problem sets, etc) will all be posted on the course Canvas web site. The web site also contains a link to Piazza for questions, comments and postings, as well as a number of helpful web site links.

<http://canvas.dartmouth.edu>