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ASTRONOMY 103–
INTRODUCTORY ASTRONOMY
(3 CREDITS)

Winter II 2017—ONLINE

Lincoln Campus

COURSE SYLLABUS

INSTRUCTOR: Dick Ehrman

PHONE: Cell: 402/429-1327 (if no answer leave message; texting is okay as long as you identify yourself!)

E-MAIL: richard.ehrman@doane.edu (Note: I may not check my e-mail every day, so if your e-mail is particularly important, it may be a good idea to contact me by phone as well.)

NOTE: As per Doane policy, you MUST submit ALL coursework for a grade in online courses via your Doane email account or through Blackboard. Since much of the communication in this class will take place via email, please make sure that your Doane account is activated and functioning before beginning this class.

"OFFICE": Of course, I don't have an assigned office space, but if you need to see me in person, I will be at Doane on Tuesday from about 430-600 PM. My classroom location will vary, but I'll usually be in the classroom assigned to LAR 202 as that's the class I teach on Tuesdays. Feel free to stop by and visit me at this time, otherwise, specific appointments can be scheduled.

MEETING TIME: **ONLINE CLASS**; no regular class meetings.
INITIAL ORGANIZATIONAL MEETING: Tuesday, Jan. 17, 2017 from 5:00-6:00 PM. **NOTE THAT THIS IS A WEEK AFTER THE OFFICIAL START OF THE SEMESTER** (I'll be in Texas the first week of the term). However, as noted below, I'll email the required information to you the first week of the semester so you can begin your work if you desire. Other meetings can be arranged as necessary or requested. The term runs from Jan. 9-Mar. 11, 2017.

TEXT: Maran, Stephen. 2013. *Astronomy for Dummies*. (3rd ed.) IDG Books Worldwide, Inc. 338 p. ISBN: 978-1-118-37697-3.

USEFUL SITES: The internet is fast becoming a repository of an incredible amount of information for astronomy or any other subject. Your classwork throughout the term will involve visiting a number of assigned websites. However, please feel free to use any website you find which is helpful; here are some of my favorite general sites:

Astronomy Magazine: www.astronomy.com
Astronomy Now: www.astronomynow.com
NASA: www.nasa.gov

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Astronomy Today: www.astronomytoday.com

All of these will be helpful, but if you're adventurous and have some time, just go to your favorite search engine and type in "astronomy," or any other pertinent topic, and see what you get!

COURSE DESCRIPTION: A study of the structure and evolution of the universe with emphasis on the solar system, stellar evolution, galaxies, cosmology, and planetary systems.

Astronomy 103 fulfills a requirement for the Scientific Perspectives Foundational Area of Knowledge (FAK). Courses in this FAK will allow Doane students to gain a greater understanding of scientific thinking and applications using core ideas in modern science. Students will consider the complexities of scientific methodologies in one or more disciplines of the natural sciences, the scientific context of issues they will confront as informed citizens, and the scientific impact on the global community. Students will work to achieve the following learning outcomes:

1. Employ methods of science for inquiry in a scientific discipline;
2. Develop their scientific literacy and ability to critically evaluate scientific information; and
3. Consider the ethical and social implications of scientific study and use of scientific findings.

COURSE OBJECTIVES: In addition to the FAK outcomes described above, this course will achieve a number of specific objectives relating to modern astronomy. A student who earns a passing grade in this course should be able to:

1. understand the scientific method and its applications to astronomy, other sciences, and life in general;

2. discuss the major historical developments and figures in the evolution of astronomy as a science;

3. utilize the basic methods of locating stars and planets;

4. describe the most important features of our solar system;

5. understand how stars originate, function, and end;

6. discuss the formation and basic function of galaxies;

7. understand the most common ideas on the origin and fate of the universe;

8. consider the likelihood and meaning of extraterrestrial life;

9. more confidently discuss, consider, and evaluate scientific ideas; and

10. utilize her/his basic knowledge of astronomy to live a more fulfilling and effective life as an individual, parent, employer/employee, and citizen.

PREREQUISITES: An interest in learning more about the universe, how it works, how it has developed over time, and what its fate might be. In addition, since this course is entirely online

(except for a half-hour organizational class meeting), you MUST have or have access the following:

1. A computer equipped with Microsoft Word word processing software
2. An internet connection (since much of the class involves visiting graphics-intensive websites, a fairly fast connection (e.g. DSL, cable, etc.) rather than dial-up is recommended)
3. A Doane email account

Much of the course work and discussion will be performed via emails between you and me. **As per Doane policy, I can ONLY accept work submitted for a grade from your Doane email account. So, please make sure your Doane email account is activated and functioning before beginning this class.** In addition, common course resources (course documents, PowerPoint presentations, some assignments, etc.) will be posted on Doane's Blackboard website. If you are not familiar with using Blackboard, instructions will be provided to you at the organizational class meeting.

CLASS SCHEDULE

As already specified, this is an online class and as such there is no "schedule" per se w/ lectures, class meetings, tests, etc. However, it is expected that students can successfully complete the class if they complete assignments on pertinent topics on a more-or-less weekly basis throughout the term. An approximate schedule follows—it is provided more as a guide so you can keep up with your text reading and online work than anything else. You can vary your schedule at your own discretion, but just remember that **all "weekly" Assignments 1-7 and the short essay exams are due on the specified dates if you wish to have me give you feedback; your remaining work (multiple choice exam and any revisions) is due by the end of the term (i.e. Saturday of Week 8).**

REMEMBER: There are THREE (3) required activities for this class:

1. **The seven (7) weekly assignments;**
2. **The two (2) short essay exams; and**
3. **The multiple choice exam.**

I will provide all assignments and instructions via email within one day of the organizational meeting. The assignments and instructions, along with supporting material, will also be posted on Doane's Blackboard site; instructions for accessing this material will be provided at the organizational meeting.

You may also do extra credit work as outlined in the course description. ALL COURSEWORK (the 4 required activities and any extra credit work) is due by the end of the term. IF YOU DO NOT TURN IN ALL REQUIRED WORK BY THE END OF THE TERM, YOU WILL ONLY RECEIVE THE POINTS EARNED ON THOSE ASSIGNMENTS TURNED IN.

SCHEDULE (suggested; you can complete your assignments at your own pace)

Date (Saturday)	Topics	Readings
Week 1 (Jan. 14)	**NO CLASS—I'LL BE OUT OF TOWN** (I will email the course documents to you this week so you can begin work if you desire.)	N/A

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Week 2	Welcome and introductions	
(Jan. 21)	The basics & history	Ch. 1
	Taking a look at the universe	Ch. 3
	Assignment 1 (10 pts.)	
Week 3	The earth/moon system	Ch. 5
(Jan. 28)	Visitors (of the inanimate kind)	Ch. 4
	Assignment 2 (20 pts.)	
Week 4	The Solar System—the terrestrial planets	Ch. 6
(Feb. 4)	**Assignment 3 (10 pts.)**	
	WEEKLY ASSIGNMENTS 1-3 AND SHORT ESSAY EXAM 1 DUE FOR COMMENT!	
Week 5	The Solar System—the gas giants, Pluto, asteroids	Ch. 7, 8, 9
(Feb. 11)	The Sun	Ch. 10
	Assignment 4 (20 pts.)	
Week 6	Stars	Ch. 11
(Feb. 18)		Ch. 13
	Assignment 5 (20 pts.)	
Week 7	Galaxies	Ch. 12
(Feb. 25)	**Assignment 6 (10 pts.)**	
Week 8	Dark matter (or is it just a cosmic fudge?)	Ch. 15
(Mar. 4)	(Ending with a) Big Bang	Ch. 16
	SETI (say what?)	Ch. 14
	Assignment 7 (10 pts.)	
	WEEKLY ASSIGNMENTS 4-7 AND SHORT ESSAY EXAM 2 DUE FOR COMMENT!!!!!	
Week 9	Complete all assigned work	
(Mar. 11)	Course evaluation	
	MULTIPLE CHOICE EXAM, REVISIONS, AND ALL REMAINING WORK DUE NO LATER THAN THE END OF WEEK 9!!!	
	***REMEMBER* that you need to turn in all 3 required activities (the 7 weekly assignments, the 2 essay exams, AND multiple choice exam)!!!**	

GRADES: You will earn your grade in this class by completing the following activities: specific online assignments/exercises, two short essay exams, and a multiple choice exam. **NOTE THAT ALL THREE ACTIVITIES ARE *REQUIRED* FOR THIS CLASS.**

REQUIREMENT #1: Online assignments/weekly exercises (150 pts. total): These are the basic, "day-to-day" exercises which will illustrate some of the fundamental concepts and activities which make up modern astronomy. Typically, these will involve visiting a website(s),

reading an article(s) or the textbook, or some similar action, and based upon that action, you will answer a series of short questions (i.e. each involving a few sentences or paragraphs) about that activity. **These assignments will be due to me by the dates indicated on the course schedule. If you submit those assignments by the date indicated, I will provide feedback on your answers, and if you so desire, you can then revise your answers to improve your grade. In order to be eligible for revision, you MUST attempt to complete ALL of a given assignment, and that completion must be a valid attempt at correctly answering that material. If you do not submit those assignments by the date indicated, you will still get credit for your work, but you will not have the opportunity to revise your answers and you will not receive ANY feedback; *i.e.* your first grade on those assignments will be your final grade, and that will be all. IF YOU DO NOT SUBMIT THE ASSIGNMENTS BY THE FINAL DAY OF THE TERM, YOU WILL LOSE THE POINTS ASSOCIATED WITH THOSE ASSIGNMENTS.**

REQUIREMENT #2: Short essay exams (50 pts. each; 100 pts. total): The exams are a series of short essay questions designed to give you an opportunity to research and write in a little more depth on several important topics. These exams will be made available early in the term so you'll have plenty of time to work on them. Although there is no specific requirement for length, most of these questions are designed to be answered in a few paragraphs to a few pages each. **These exams are due by the date indicated on the course schedule. If you submit your exams by the dates indicated, I will provide feedback on your answers, and if you so desire, you can then revise your answers to improve your grade. In order to be eligible for revision, you MUST attempt to complete ALL of a given assignment, and that completion must be a valid attempt at correctly answering that material. If you do not submit the exams by the date indicated, you will still get credit for your work, but you will not have the opportunity to revise your answers and you will not receive ANY feedback; *i.e.* your first grade on the exam will be your final grade, and that will be all. IF YOU DO NOT SUBMIT THE EXAMs BY THE FINAL DAY OF THE TERM, YOU WILL LOSE THE POINTS ASSOCIATED WITH THOSE EXAMS.**

REQUIREMENT #3: Multiple choice exam (50 pts. total): This is a traditional multiple choice exam. Simply complete the exam by checking the boxes for the correct answer for each question, save the exam to your computer, and submit it to me. **This exam is due by the end of the semester. Also, there are no revisions allowed for this exam, so make sure your answers are correct before you submit it! IF YOU DO NOT SUBMIT YOUR MULTIPLE CHOICE EXAM BY THE FINAL DAY OF THE TERM YOU WILL LOSE THE POINTS ASSOCIATED WITH THAT EXAM.**

All of these activities will typically be submitted to me electronically. In the case of the weekly assignments and the short essay exams, just download the appropriate file(s) and fill in your answers in the space provided. If possible, please provide your answers in a different color or font so it's easy for me to see your answers. Then, just save your assignment in a MS Word file, and email it to me when you're done. I will normally view and grade the activity online, but may print out the activity if necessary, and will let you know via email what your grade is for that activity. For those assignments that are submitted on time, I will provide feedback/suggestions via email, and you will have the opportunity to revise your answers for a better grade. For the multipe choice exam, simply check the boxes for the correct answers as instructed in the exam, save your completed exam to your computer, and submit it to me as an attachment.
IMPORTANT NOTE: I generally do a good job of keeping track of student's submitted work, but occasionally mistakes and/or computer malfunctions do happen. SO, PLEASE BE SURE TO SAVE YOUR WORK on your computer until the course is completed, in case you need to resubmit any work.

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I will make every attempt to respond to any student's email submittals, questions, or requests for more information within one week of receiving an email. However, my regular job sometimes puts me in places where I may not have email access. That being the case, **if you send me an email and I have not responded to you within your desired timeframe and you need an answer or feedback, please contact me on my cell phone (402-429-1327) and I'll be happy to assist you.**

The online assignments, short essay exams, and multiple choice exam will be worth the points indicated above. **THE TOTAL NUMBER OF POINTS AVAILABLE ON THE WEEKLY ASSIGNMENTS, SHORT ESSAY EXAMS, AND MULTIPLE CHOICE EXAM WILL BE 300;** your final grade will be calculated against that 300 pt. total as outlined below.

GRADE SCALE: Grades will be assigned on a simple point accumulation basis. There are 300 points possible on the three required activities (assignments, exam, paper/project); your grade will be determined relative to those 300 points based upon the following scale:

POINTS	***GRADE***
290 & above	A+
280-289	A
270-279	A-
260-269	B+
250-259	B
240-249	B-
230-239	C+
220-229	C
210-219	C-
200-209	D+
190-199	D
180-189	D-
179 & below	See you next term

EXTRA CREDIT: In addition to the required work described above, you may do extra credit work if you so desire. There are several categories you can choose from:

1. Short Research Paper: Papers can be on **ANY** subject, book, or article pertinent to this class, as long as the subject is cleared with me first. They should be typewritten or neatly handwritten, and should be about 5 pages with references. Any standard format is acceptable.

2. Book/Article Review: You may review a book or scientific article on a topic that is pertinent to this class. There are a multitude of such works, but anything that relates to astronomy is okay. The length will vary with the type of review you do, but generally 3-5 pages is adequate, again typewritten or neatly handwritten.

3. Site Visit: You can also make a visit to Mueller Planetarium (in Morrill Hall) or the observatory on the UNL campus, or Hyde Observatory at Holmes Park and write up a short report of your visit there, emphasizing the displays which deal with astronomy, space science, etc. If you have the chance to visit any other location of astronomical interest (e.g. another planetarium or observatory, museum, display, etc.), you may substitute this for the visit to the planetarium or observatories.

4. Website Reviews: Astronomy (like most sciences), is fast becoming an Internet-based endeavor. So, for this class, you can visit a related website (OTHER than the ones required in your online assignments), and write a short synopsis/critique of the site (what it was about, what you liked/disliked, why, etc.). Again, length will vary, but generally 2-5 pages (you may also download pages, pictures, etc.) is okay.

Each of these activities is worth 5 pts. toward your final grade, and you may pick any combination of up to 4 different items. Thus, the total possible extra credit you can earn in this class is **20 POINTS!!!!** Your extra credit work will be due to me by the end of the term.

FINAL GRADES: Final grades will be assigned after final due date for all work (the end of the term). Normally, I'll grade your assignments as I get them, then let you know via email what your grade was for that particular activity. Assignments or exams received at the end of term will be graded by the grade submission due date established by Doane for each term. **ALL ELECTRONIC SUBMISSIONS OF ASSIGNMENTS, EXAMS, OR PAPERS/PROJECTS WILL BE DELETED NO EARLIER THAN 24 DAYS AFTER THE END OF A TERM. HARDCOPY VERSIONS OF THE SAME WILL BE DESTROYED AT THE SAME TIME UNLESS THE STUDENT REQUESTS THEIR RETURN.**

SUBMITTAL OF WORK: As described above, your work will be submitted via email, usually in the form of attachments. However **PLEASE MAKE SURE THAT ANY ELECTRONIC SUBMITTALS ARE IN MICROSOFT WORD FORMAT (.doc, .docx,) OR PDF.** I have considerable difficulty converting some other forms of submittals (especially .wps files), so please submit your work in standard Microsoft format. And again, please make sure that you save your work to your computer just in case you need to resubmit it! Finally, remember that **I CAN ONLY ACCEPT WORK SUBMITTED ELECTRONICALLY FROM A DOANE EMAIL ACCOUNT!!!!**

ACADEMIC INTEGRITY POLICY: In keeping with the mission of Doane-Lincoln in particular and higher education in general, the Doane College Academic Integrity Policy will be adhered to in this class. All submittals will represent your own work. Any use of others' ideas and words without proper citation of sources is plagiarism and will result in a loss of all points for that particular assignment or test. You are allowed and encouraged to collaborate with other students as you work through this class, but **MAKE SURE THAT ALL WORK IS SUBMITTED IN YOUR OWN WORDS. I WILL UTILIZE A VARIETY OF PLAGIARISM DETECTION SOFTWARE THROUGHOUT THIS CLASS; IF YOUR WORK IS SUBSTANTIALLY PLAGIARIZED YOUR WORK WILL EITHER BE RETURNED OR YOU WILL RECEIVE A GRADE OF ZERO AT MY DISCRETION.**

READINGS AND NOTES: I've provided you with a set of course notes which give you an outline of the topics that I consider to be most important for a beginning student of astronomy. The text readings are intended as supplementary to these notes. In addition, my course lectures (from the in-class version of this class) in the form of PowerPoint presentations will be posted on the Blackboard system so you can download them if you wish. Between the text, other printed resources, and especially the internet, there is an ENORMOUS amount of information available on astronomical topics which makes it pretty easy to get lost or overwhelmed. So, I want to make sure that you have a good idea of what I think is important (and what topics you're likely to be evaluated on). You'll also notice that the text I use is a lot more informal than many texts you're used to. This being the case, we'll cover some stuff that's not covered in depth or at all in the text. Thus, it's important that you read the material that I assign, but particularly so as it relates to the stuff that is in the notes. So please feel free to use any other source of information that

works for you; but remember that the course notes represent a kind of common baseline of the things that I hope you remember when you finish this class (and the things that will show up on exams or exercises). As I will tell you many times in class, I'm certainly **NOT** a world-class astronomer (I'm actually just a geologist….), so making judicious use of all the sources of information you can get your hands on will help you learn more about astronomy.

OUTSIDE OBSERVATION: Unfortunately, since this is an online class, we won't be doing a lot of actual observation of the night sky as a class. Don't feel cheated about this—my normal on-campus class doesn't do much observation either, since the campus is located in the middle of Lincoln, and therefore it's not really likely that we are able to travel far enough away from campus in order to really get a good look at the sky. However, we will take a look at what some of the basic constellations look like via the internet, and we'll also look at some online observational tools (virtual planetaria). And, if you are able, a weekend trip to the Hyde Observatory at Holmes Lake or the new observatory at the UNL city campus can help you out with your own observations!

INCOMPLETES: As you might be aware, Doane has a specific policy on incompletes. Please keeep this in mind as you do your classwork; the policy is as follows:

An Incomplete (I) may be given if a student is not able to complete the work required for a course by the last day of the course due to sickness or other extenuating circumstance that the student has discussed with the instructor. When awarding an incomplete, the instructor will assign an expiration date NO LATER THAN the last day of the next term. If the expiration date passes without a grade change from the instructor, the incomplete grade will automatically convert to an "F". This is a final grade and will not be changed, per the grade change policy.

In order to receive an incomplete (I), a student must have completed at least 75% of the coursework required for the course. If a student wishes to receive an incomplete for a course, the student will obtain a form from the registrar that will allow the teacher and the student to detail the coursework required to remove the incomplete. The student must complete the form, obtain the signature of the instructor on the form, and return it to the Registrar's office.

QUESTIONS: Heartily encouraged at all times and about any subject you're having trouble with. Remember, in this class, ***THERE IS NO SUCH THING AS A DUMB QUESTION!!!!*** You may get some rather absurd answers from time to time, but don't let that stop you. In an online setting, it's sometimes easy to get confused or lost, so don't let that happen. Send me an email, give me a call, or set up an in-person meeting and I'll help you out. That's not an inconvenience—it's what you're paying me for!

So, with all these pleasant thoughts in mind, relax, sit back, and enjoy a little astronomy. The most important thing to remember is ***DON'T WORRY!!!!!*** Worrying about your grade, class status, image, etc. spoils more learning opportunities than just about anything else. With a little bit of work and thought, you'll pass this class, and you might just learn something to boot!