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## National Center of Excellence

Grape and Wine Education for the 21<sup>st</sup> Century

### VIN 106 - Physics for the Wine Industry

Date: January 29 – May 11, 2018

Course Name: Physics for the Wine Industry

VESTA Course Number: VIN 106

Instructor: Dr. Alex Hamill

Office Hours: By appointment via phone or email

Semester: Spring 2018

Delivery: Online

Course Credit: 3 Hours

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**Course Description:** Introduction to physical theories covering the content areas of mechanics, fluids, sounds, thermodynamics and their relationship to the grape and wine industry.

**Prerequisites:** MTH 103 - Intermediate Algebra or higher

**Next Courses in Sequence:** Any VIN course

#### Course Objectives

Through recorded and live lectures, facilitated discussions, quizzes and written assignments, the student will:

- Demonstrate an understanding of basic topics in physics that can aid in understanding of industrial elements of the grape and wine industry
- Be introduced to fundamental concepts such as Newton's Laws of Motion that will provide essential context for later topics such as properties of solids, liquids, and gasses
- Become comfortable with why wine appears red or white, cloudy, or transparent, and understand the basic function of industry tools used to evaluate liquids including wine
- Gain an appreciation of the physics behind temperature, heat, and heat transfer that can aid in the understanding of manufacturing process requirements
- Although this course will not delve deeply into chemistry, students will be introduced to atoms and molecules in order gain a level of comfort with the language of physics when discussed at the atomic level
- Develop an understanding of the basis of many instruments, measurements, and industry standards, in order to become comfortable with concepts of light including reflection, refraction, dispersion, the relationship between wavelength and perception of color, and properties of lenses

#### Textbook and Supplemental Materials

##### Required Textbook and Material

Kuhn, Karl F. *Basic Physics: A Self-Teaching Guide*. (1996). New York: John Wiley & Sons.

ISBN 10: 04-7113-447-3 or ISBN 13: 978-04-7113-447-3

This book can be purchased through Amazon.com: <http://goo.gl/IIQZg6> or the vendor of your choice.

## Lecture Topics, Schedule, and Reading Assignments

<b>Week — Dates</b>	<b>Wednesday Live Class Meeting</b>	<b>Lecture Topic (participation points)</b>	<b>Chapter(s) Covered</b>	<b>Quiz/Exam</b>	<b>What to do to prepare for the next class</b>
<b>1</b> 01/29 - 02/04	01/31	Welcome and Introduction (7pts)	None	None	Independently Read Chapter 1: Force & Motion
<b>2</b> 02/05 - 02/11	02/07	Force and Motion (7pts)	Chapter 1	None	Read Chapter 2: Newton's Laws of Motion
<b>3</b> 02/12 - 02/18	02/14	Newton's Laws of Motion (7pts)	Chapter 2	Quiz 1: Force & Motion (20pts)	Read Chapter 3: Conservation of Momentum & Energy
<b>4</b> 02/19 - 02/25	02/21	Conservation of Momentum and Energy (7pts)	Chapter 3	Quiz 2: Newton's Laws of Motion (20pts)	Read Chapter 4: Gravity
<b>5</b> 02/26 - 03/04	02/28	Gravity (7pts)	Chapter 4	Quiz 3: Conservation of Momentum & Energy (20pts)	Read Chapter 5: Atoms & Molecules
<b>6</b> 03/05 - 03/11	03/07	Atoms and Molecules (7pts)	Chapter 5	Quiz 4: Gravity (20pts)	Read Chapter 6: Solids Chapter 7: Liquids & Gases
<b>7</b> 03/12 - 03/18	03/14	Solids, Liquids, and Gases (8pts)	Ch. 6 and 7	Quiz 5: Atoms & Molecules (20pts)	Read Chapter 8: Temperature & Heat Chapter 9: Change of State and Transfer of Heat
<b>8</b> 03/19 - 03/25	03/21	Temperature, Heat, Change of State, Heat Transfer (7pts)	Ch. 8 and 9	Midterm Exam, Chapters 1-9 (100pts)	Read Chapter 10: Wave Motion
<b>9</b> 03/26 - 04/01	03/28	Wave Motion (8pts)	Chapter 10	Quiz 6: Temperature, Heat, Change of State, Heat Transfer (20pts)	Read Chapter 11: Sound Chapter 12: Diffraction, Interference, and Music
<b>10</b> 04/02 - 04/08	04/04	Sound, Diffraction, Interference and Music (7pts)	Ch. 11 and 12	Quiz 7: Wave Motion (20pts)	Chapter 18: Light: Wave or Particle?
<b>11</b> 04/09 - 04/15	04/11	Light: Wave or Particle? (7pts)	Chapter 18	Quiz 8: Sound, Diffraction, Interference & Music (20pts)	Read Chapter 20: Reflection, Refraction, and Dispersion
<b>12</b> 04/16 - 04/22	04/18	Reflection, Refraction, and Dispersion (7pts)	Chapter 20	Quiz 9: Light: Wave or Particle? (20pts)	Read Chapter 21: Lenses and Instruments

<b>13</b> 04/23 - 04/29	04/25	Lenses and Instruments (7pts)	Chapter 21	Quiz 10: Reflection, Refraction, and Dispersion (20pts)	Read Chapter 22: Light as a Wave Chapter 23: Color
<b>14</b> 04/30 - 05/06	05/02	Light as a Wave, and Color (7pts)	Ch. 22 and 23	Quiz 11 (20 pts)	None
<b>15</b> 05/07 - 05/11	05/09	Final Exam: Chapter 10 and beyond (100pts)			
		<b>Total possible points for participation and attendance: 100pts</b>		<b>Total possible points for Quizzes: 220</b> <b>Total possible points for Exams: 200</b>	

*The instructor reserves the right to adjust the schedule as necessary.*

### **Instructional Format**

This is an online course with a synchronous component. An online course site (Learning Management System) is provided by the host institution to provide announcements, lectures, notes, supplemental printed and web-based materials, and assignments to the students. It also serves as a central point for interaction/communication between the instructor and the students.

### **Live Class Meeting**

The live class meeting will take place every **Wednesday from 6:00 to 7:00 p.m. Central Time** via the **Zoom** web classroom system. Participation to the live class meetings is *required*. This is an opportunity for the instructor to go over weekly topic highlights and for students to interact with the instructor and fellow students through questions and discussions. Students are expected to be prepared to ask questions and actively participate in the discussions.

The link to the Zoom virtual classroom will be posted at the top of each weekly module. Students will use the same virtual classroom for their live class meetings the entire semester. The sessions will take place on the dates listed in the above schedule.

### **Course Assignments**

Course Assignments will include weekly reading assignments, physics problems assigned from the text or other available sources, quizzes, and tests. Students are expected to view all pre-recorded lectures and complete assigned reading and physics problems prior to attendance of the online class.

### **Exams**

There will be two exams. Exams will test knowledge of the material covered and may include essay and short answer questions. Students will take the exams online through the course site at proposed dates. Make-up examinations will not be given, as an adequate time period will be available to take the exam.

### **Expectations and Instructor Feedback**

With the online course format, students are expected to participate and be prepared for the live class meetings by studying the weekly lecture and reading materials. Students also need to check the online course site for class materials and communications regularly, be aware of the required activities and assignments, and adhere to the deadlines listed in the course schedule. This will ensure a successful learning experience.

The instructor will make every effort to respond to student questions and complete assignment/exam grading in a timely manner.

### **Late Material**

Late assignments are not accepted and will be given a zero. The instructor reserves the right under extreme cases to make exceptions to this policy.

### **Grading and Assessment Scale**

- 90 – 100% = A
- 80 – 89.9% = B
- 70 – 79.9% = C
- 60 – 69.9% = D
- Below 60% = F

<b>Points Distribution</b>	
<b>Activity</b>	<b>Points</b>
Quizzes	220
Midterm Exam	100
Live Class Participation	100
Final Exam	100
<b>Total</b>	<b>520</b>

It is the students' responsibility to see that all graded assignments and exams reach the instructor in a timely fashion so grades can be issued.

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## **Missouri State University Institutional Policies**

### **Withdrawing from the Course**

It is the students' responsibility to see that all requirements are completed within the semester timeframe so grades can be issued. Should it become necessary to withdraw, it is the student's responsibility to do so according to the guidelines found at:

<http://wp.missouristate.edu/recreg/withdrawl-procedures.htm>

*\*Students planning to withdraw from this course must also complete the VESTA Withdrawal/Change of Schedule form and submitting to the VESTA office.*

### **Online Student Academic and Student Support Resources**

Missouri State University-West Plains provides a full-range academic and student support for online students. To learn more about specific academic and student support and how to access the resources, go to <http://online.wp.missouristate.edu/>

## **Attendance Policy**

Missouri State University believes that students must attend class in order to achieve the best learning results. In the case of VESTA online courses, attendance is defined as active participation in the form of attending synchronous class meetings (if applicable), completing reading/writing/testing assignments by assigned deadlines, and maintaining regular communication with course instructor via the online course site and communication tools designated by the instructor. For courses with a practicum/workshop component, students *must* participate and complete the number of hours of practical experience required. Instructors may assign attendance grade as part of course grade if they choose to do so. The University's attendance policy can be found at: <http://www.missouristate.edu/registrar/catalog/attendan.html>

## **Statement of Nondiscrimination**

Missouri State University is an equal opportunity/affirmative action institution, and maintains a grievance procedure available to any person who believes he or she has been discriminated against. At all times, it is your right to address inquiries or concerns about possible discrimination to the Office for Institutional Equity and Compliance, Park Central Office Building, 117 Park Central Square, Suite 111, 417-836-4252. Other types of concerns (i.e., concerns of an academic nature) should be discussed directly with your instructor and can also be brought to the attention of your instructor's Department Head. Please visit the OED website at: <http://www.missouristate.edu/equity/>

## **Academic Integrity Statement**

Missouri State University is a community of scholars committed to developing educated persons who accept the responsibility to practice personal and academic integrity. You are responsible for knowing and following the university's student honor code, Student Academic Integrity Policies and Procedures, available at: <http://www.missouristate.edu/academicintegrity/> and also available at the Reserves Desk in Meyer Library. Any student participating in any form of academic dishonesty will be subject to sanctions as described in this will also be notified by email.

## **Student Disability Accommodation Policy and Procedures**

To request academic accommodations for a disability, contact the Director of [Disability Services](#), Plaster Student Union, Suite 405, (417) 836-4192 or (417) 836-6792 (TTY), or [www.missouristate.edu/disability](http://www.missouristate.edu/disability). Students are required to provide documentation of disability to Disability Services prior to receiving accommodations. Disability Services refers some types of accommodation requests to the [Learning Diagnostic Clinic](#) which also provides diagnostic testing for learning and psychological disabilities. For information about testing, contact the Director of the Learning Diagnostic Clinic at (417) 836-4787 or <http://psychology.missouristate.edu/ldc>.

## **Religious Accommodation**

The University may provide a reasonable accommodation based on a person's sincerely held religious belief. Students who expect to miss classes, examinations, or other assignments as a consequence of their sincerely held religious belief shall be provided with a reasonable alternative opportunity to complete such academic responsibilities. It is the obligation of students to provide faculty with reasonable notice of the dates of religious observances on which they will be absent by submitting a *Request for Religious Accommodation Form* to the instructor by the end of the third week of a full semester course or the end of the second week of a half semester course. For more information see: [http://www.missouristate.edu/policy/op1\\_02\\_1\\_religiousaccommodation.htm](http://www.missouristate.edu/policy/op1_02_1_religiousaccommodation.htm)