Hampshire College

Central Records (Registrar)

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Transcript Explanation and Key

Hampshire College is a private four-year liberal arts college located in Western Massachusetts, distinguished among colleges for its non-traditional academic program designed to support students in pursuing a personalized program of study. Students progress through a three-tiered system of divisions rather than the traditional freshman through senior levels. Division I is Hampshire's first year program, designed to introduce students to a variety of liberal arts study areas. Division II is the middle two years of the education in which students complete a self-designed concentration of studies. In Division III, the final year, students undertake an extensive independent project of their own design. In both Division II and III, students work under the supervision of a two-person faculty committee.

Hampshire College students receive narrative evaluations in lieu of grades for successfully completed courses. Upon completion of each Division, they also receive a comprehensive narrative evaluation of their work from the chairperson of their faculty committee. The Hampshire transcript consists primarily of these evaluations, but may also include documentation for study away from campus, internships, and other educational activities. **Because of Hampshire's method of evaluating student work, no grade point average (GPA) or class rank appears on the Hampshire transcript or any other official documentation produced by the College.**

Hampshire College is a member of the Five College Consortium, which includes Amherst, Mount Holyoke, and Smith Colleges, and the University of Massachusetts at Amherst. Students attend classes at the other institutions and receive letter grades. They register for classes through an interchange process. The only permanent record of these courses is on the Hampshire transcript.

Hampshire College is fully accredited by the New England Commission of Higher Education (NECHE) to award the Bachelor of Arts degree, which is equivalent to other four-year private liberal arts programs typically requiring a range of 120 to 128 credits. Because students pursue an individualized program of study, no major is identified on the diploma or transcript. In fall and spring terms, Hampshire students studying on campus, on field study, or participating in exchange programs are enrolled full-time. Enrollment in summer and January terms is optional.

Transcript Contents

The first page of the transcript lists Divisional requirements, courses and other activities attempted, completed, and in progress. This is followed by the student's course and Divisional evaluations. Additional documents may be included for field study, exchange programs and other evaluated activities. A course description section is included for students whose degree is not yet awarded, or upon student request.

Credit Recommendation

For the purpose of transcript evaluation, Hampshire recommends four credits for semester-long academic courses, independent studies, special projects and teaching assistantships; two credits for half-courses (identified in the title); and one credit for courses designated with "#" as co-curricular. For students who entered prior to fall 2017, Hampshire recommends four semester credits for academic Five College courses. For students who entered the institution fall 2017 and beyond, credit for Five College courses is included on the transcript. Hampshire does not recommend credit for learning activities. In addition to the work described above, students complete independent work in Division II and III for which we have no standard recommendation.

Note: The College recommends six semester credits for Division I projects completed by students who entered prior to fall 2002.

Explanation of Courses Header

Course Course Number
Title Title of the course or activity
CmplStat Completion Status
Inst/Cred Institution/Credit, Amherst College (AC)/(A); Mount Holyoke College (MC)/(M); Smith College (SC)/(S); University of Massachusetts (UM)/(U).
Div/Use Indicates if the course or activity is used in Division I, II, or III.

Note: *Only successfully completed co-curricular Hampshire courses are present on the transcript. Very few have narrative evaluations.*

Explanation of completion status notations

EVL Hampshire College course successfully completed and evaluated. The notation is present on transcripts for students who entered 2017 fall and beyond. Prior to that, the presence of an evaluation indicates successful completion of the course.
W Withdrawal after the add/drop deadline at the beginning of the semester.
INC Incomplete Course
NO Hampshire College course not successfully completed and not evaluated.
TR Transfer course
NR Evaluation or grade not received, no credit recommended
AUD Audit

HAMPSHIRE COLLEGE
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Name: Haochen Wang
Admitted to Degree Program: Fall 2018
Degree Status: Not Yet Awarded

DIVISIONAL REQUIREMENTS

DIVISION III In progress
Div

Title: High Energy Physics: Beyond the Standard Model
D2

DIVISION II Passed: 24 May 2022

Title: 1. Music Tech(Music+Physics+CS) 2.Quantum
D2

Computing(PHY+CS) 3.AI Composer(MUS+CS)
D2

DIVISION I Passed: 26 Oct 2020

D2

TRANSFER WORK

D2

D2

Course	Title	Div
IB English B HL		D1
IB Mathematics HL		D1
IB Physics HL		D1

COURSES

Number	Title	Cmpl	Cred	Div
Term Unknown				
Univ of California Berkeley				
JAPAN 1	Elem Japan Intens	TR		D1
Term Unknown				
University of Massachusetts Amherst				
PHYSICS 152	General Physics II	TR		D2
Term Unknown				
University of Massachusetts Amherst				
MATH 331	Ord Dif/Sci Eng	TR		D2
Fall 2018				
CS-173T	Introduction to Data Science	EVL		D1
HACU-0119	Musical Beginnings	EVL		D1
NS-0116	Math to Survive in the World	EVL		D1
NS-0206	Modern Physics	EVL		D2
NS-0260	Calculus in Context	EVL		D2
OPRA-0132	Outdoor Adventure Samp.	EVL #		D2
Spring 2019				
CS-0288	Programming Game Theory	EVL		D2
HACU-0116	Buddhism in America	W		
HACU-0217	Analog Electronic Music Synth	EVL		D2
NS-0261	Calculus II	EVL		D2
NS-0274	Linear Algebra	EVL		D2
MTH-153	Intro Discrete Mathematics	A	SC-4cr	D2
OPRA-0185	Fundamentals of Tennis	EVL #		D2
Fall 2019				
HACU-0290	Electroacoustic Music I	EVL		D2
COSC-241	Artificial Intelligence	C	AC-4cr	D2
CSC-212	Program With Data Structures	A-	SC-5cr	D2
GERMA-110	Elementary German	P	UM-3cr	D2

COURSES

Number	Title	Cmpl	Cred
Fall 2020			
HACU-0200	Independent Study	EVL	
HACU-0201	Mixed Audio: Concepts, Practices and Tools Exploring Electronica	EVL	
MUSI-113	Jazz Theory & Improvis I	A-	AC-4cr
Fall 2021			
NS-0240	Statistics	EVL	
MTH-212	Multivariable Calculus	A	SC-4cr
MUSI-241	Harmony & Countrpoint I	A	AC-4cr
PHY-317	Classical Mechanics	A	SC-4cr
Spring 2022			
COMPS-589	Machine Learning	A	UM-3cr
E&CEN-397Q	St-Intro/Quantum Computing	A	UM-3cr
MTH-364pd	Advt-Conti Appl Part Diff Equ	A	SC-4cr
MUSI-246	Jazz Theory & Improvs II	A-	AC-4cr
PHYS-348	Quantum Mechanics	A	AC-4cr
Fall 2022			
Registered Full Time in Division III			
PHYSI-597Q	St-Quantum Computation		UM-3cr
PHYSI-602	Statistical Physics		UM-3cr

** EVALUATION SECTION FOLLOWS **

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2018F
Course: CS-173T Introduction to Data Science
Instructor: Ethan Meyers

COURSE DESCRIPTION

Description: With the rise of Internet and other new technologies, large datasets are now available that can give deep insights into questions about science, human nature, and society. However, to extract useful information from this data, powerful data analysis methods are needed. Data Science is a field that addresses this issue by using computational tools to gain insights from large datasets. In this class, students will learn how to apply Data Science methods, and the R programming language, to visualize, manipulate, and make predictions from data. Assignments will consist of weekly readings of data journalism articles, weekly problem sets to practice particular skills, and a midterm and a final project where students will explore a dataset in more depth. By the end of the class students will be able to visualize and analyze data in order to answer a range of interesting questions.

INSTRUCTOR NARRATIVE

Haochen (Harry) Wang did very good work in this class. Harry entered the class with a strong programming background so it was relatively easy for him to do well on the worksheets and DataCamp assignments. However, he did undertake some of the additional harder problems and it is clear that he learned how to effectively use the R programming language to analyze data. Harry also had thoughtful responses to the assigned readings to the data journalism readings, which showed that he was actively engaged with the material. Harry's data journalism, midterm and final project presentation were entertaining and generally well done, which demonstrated that he could effectively convey quantitative information. For his midterm project, Harry analyzed trends in the electronic music industry where he created a number of interesting and insightful plots, although the results could have been stronger had he paid a bit more attention to the details. For his final project, Harry analyzed Donald Trump's tweets. This project did a great job of finding interesting trends in the data and discussing them in the written report. In summary, Harry did very good work in this class, and I hope that he continues to apply what he has learned in future work.

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2018F
Course: HACU-0119 Musical Beginnings
Instructor: Noah Horn

COURSE DESCRIPTION

This course focuses on the broad fundamentals of western music and music theory, including music literacy (how to read western music notation). We will learn the theoretical concepts (pitch, rhythm, timbral nuances, texture, intervals, chords, harmony, etc.) and develop our sense of music cognition through ear training and solfege singing. This course will connect music to theory by teaching students how to compose music. Students will also attend concerts and write short reports. No prior music training or literacy is required. Students are required to attend one ear training class every week, either Monday or Thursday evening from 7:00-8:30pm.

INSTRUCTOR NARRATIVE

Harry Wang did well in Musical Beginnings. He grasped the core content of the course, and performed well on all of the assignments. Harry had acceptable attendance, coming in well under the absence limit for the main classes, though pushing the limit by missing many of the ear training sessions. However, he acquired the expected skills in ear training, with his individual appointment featuring good scales, rhythm, and melodic contour. He has room for improvement in the usage of solfège. Harry's final evaluation was turned in quite late, but its contents showed that he understood the key concepts of music theory presented in the course. Harry's final performance was a very interesting combination of three smaller compositions that he had written. His music was in the genre of electronic music, an effective change of pace from the rest of the class, and demonstrated an expert knowledge of creating music with computers. One fascinating component of the final project sampled the Philosophy of Liberty lecture well-known online and turned it into electronic music with a regular drumbeat. Overall, Harry succeeded in Musical Beginnings. He was quiet, rarely speaking during class, but paid attention and clearly worked on mastering the concepts. His electronic music especially shows a lot of promise and he should continue working on that in the future.

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2018F
Course: NS-0116 Math to Survive in the World
Instructor: Geremias Polanco Encarnacion

COURSE DESCRIPTION

Many factors determine whether or not you get a job, succeed or fail in a project, and loose or make money on an investment. Your problem-solving ability is one of them, but understanding the principles behind the situation you face (in practice or in theory) is one of the most fundamental. To survive in the world, people need to apply countless mathematical principles, consciously or unconsciously. In this course you will understand some of the mathematical principles that you already use, and will learn some other new ones. Topics will include minimizing time required to complete certain tasks; scheduling and critical path analysis; fair division; voting theory; coding theory; mathematics of investment and credit; art, beauty and math; and other topics at our discretion

INSTRUCTOR NARRATIVE

In this course, we focused on financial mathematics applied to personal finance. We studied the theory of interest including discount, simple and compound interest, present and future value, equations of value, annuities, etc. The aspects of personal finance included: financial planning, career planning, budgeting, use and misuse of credit, credit alternatives, purchasing and insuring, investing fundamentals, and planning for retirement. Students studied chapters and summarized them, worked on daily problem sets, completed homework sets consisting of math problems, and chose a topic of interest to research with a focus on applying their newly acquired knowledge to the topic. Harry attended class regularly and was engaged in the ongoing class discussion, contributing with questions, comments and constructive input. He completed all the homework as expected and made use of the resources available to facilitate or solidify his understanding. Harry's work on the skills check and homework showed that he had gained a solid understanding of the basic concepts treated in the course. We considered a few extremely challenging problems, but Harry was proactive in using the resources available and was able to obtain a pretty good understanding of most of them. The financial aspects of the course were very beneficial for Harry and he was able to fully grasp them. I think that overall Harry completed this course with excellence.

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2018F
Course: NS-0206 Modern Physics
Instructor: Kaca Bradonjic

COURSE DESCRIPTION

Modern Physics encompasses the major discoveries made in the early 20th century, which can be broadly divided into relativity and quantum mechanics. This course is a survey introduction to the special theory of relativity, the development of quantum theories of matter, light and their interactions, and the application of these theories to atomic, nuclear, and solid state physics. The topics covered will include special-relativistic mechanics, the atomic structure of matter, black body radiation, photo-electric efect, particle-wave duality, Schrodinger equation in one and three dimensions, and electron spin. The course is essential for students intending to pursue advanced physics courses on these topics and would be of interest to science students who want to gain a basic understanding of the foundations of modern physics.

INSTRUCTOR NARRATIVE

By the end of the semester, students were expected to be able to: identify the experiments that led to the development of modern physics and explain the key ways in which the new theories depart from classical physics; solve problems requiring the understanding of special relativity (time dilation, length contraction, etc.); solve problems requiring the understanding of the fundamental principles of quantum mechanics (uncertainty principle); show understanding of the application of relativity or quantum mechanics to a particular physical system (final project). Haochen (Harry) Wang achieved satisfactory proficiency in the above-listed course goals. Having a strong background in physics, Harry did very well on the early assignments, which reviewed the material he already knew. But as we moved on to relativity and quantum mechanics, his performance declined. Harry attended most of the classes and participated in the in-class activities, but he frequently seemed tired and unable to focus. His written assignments often did not show the details of his calculations, though they did get progressively more thorough. At the end of the semester, he gave a solid presentation on particle physics. Harry, whose insightful questions and several excellent assignments clearly demonstrated his ability, should aim for quality over quantity when it comes to course scheduling, and adapt his study habits to the new process-centered learning environment.

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2018F
Course: NS-0260 Calculus in Context (Calculus I)
Instructor: Sarah Hews

COURSE DESCRIPTION

Calculus provides the language and some powerful tools for the study of change. As such, it is an essential subject for those interested in growth and decay processes, motion, and the determination of functional relationships in general. Using student-selected models from primary literature, we will investigate dynamical systems from economics, ecology, epidemiology and physics. Computers are essential tools in the exploration of such processes and will be integral to the course. No previous programming experience is required. Topics will include: 1) dynamical systems; 2) basic concepts of calculus -- rate of change, differentiation, limits; 3) differential equations; 4) computer programming, simulation, and approximation; 5) exponential and circular functions. While the course is self-contained, students are strongly urged to follow it up by taking NS 261-Calculus II to further develop their facility with the concepts. In addition to regular substantial problem sets, each student will apply the concepts to recently published models of their choosing.

INSTRUCTOR NARRATIVE

Harry consistently showed a good work ethic in "Calculus I." He attended most of the classes, though was sometimes late, engaged in the group work, and completed the homework assignments. Students were given the opportunity to revise homework assignments multiple times and Harry took advantage of this option when needed (which was rare). The take-home midterm and final highlighted Harry's understanding of calculus. Harry usually included clear graphs but should make sure that he labels his axes and includes important values. He showed a good understanding of mathematical notation that helped him perform calculations that were usually correct. He also demonstrated a very strong understanding of all the core concepts and was able to solve a wide range of word problems using derivatives. Harry should work on always including correct units and interpreting the answers in the context of the problem. Given that Harry demonstrated a strong understanding of calculus throughout the semester, I expected him to complete the bonus questions on the final. He did not do so. In the final project, Harry transitioned from exploring "how something is changing" to "why something is changing," engaging with differential equations and showing a more advanced understanding of calculus than is usual in a traditional "Calculus I" course. Using MATLAB, a multi-paradigm numerical computing environment, Harry worked with peers to demonstrate a dynamic understanding of a rabbit/fox system and showed a deep understanding of the core concepts of calculus -- local linearity and limits. Overall, Harry showed strong understanding in "Calculus I" and is well-prepared for "Calculus II."

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2019S
Course: CS-0288 Programming Game Theory
Instructor: Lee Spector

COURSE DESCRIPTION

In this course we will read primary literature on mathematical models of conflict and cooperation (game theory), and we will write computer programs to replicate reported results and explore related hypotheses. We will also discuss applications of game theory in many areas, possibly including economics, politics, war and peace, responses to climate change, and evolutionary biology. Prerequisite: Strong computer programming skills.

INSTRUCTOR NARRATIVE

The objectives of this course were to engage in scientific inquiry by using computer programming to explore mathematical models of conflict and cooperation (game theory), to understand and to be able to navigate current research literature, and to work collaboratively with classmates. Students were evaluated on the basis of attendance, participation in class activities, on-time completion of all assignments, and a portfolio. The assignments involved reading scientific papers, conducting literature searches, programming, and preparation of presentations. Portfolios were expected to contain notes on readings, program code, and documentation of all work done for the class. Haochen (Harry) Wang's performance in this course was generally very good. His attendance was good, he participated in most class activities, and he made positive contributions to the work of his project groups and the class as a whole. Harry participated in project groups that investigated game-theoretic dimensions of the behavior of motorists in traffic, gambling on games that utilize quantum computing hardware, and fire alarm evacuation compliance. Harry appeared to be engaged in all of this project work, and to have gained knowledge both about game theory and about the specific topics on which his projects focused while developing programming, scientific inquiry, and collaboration skills. The only weakness in his performance was that his portfolio did not document his work as much as I would have liked, and that he did not respond in substantive ways to feedback on this issue. It was a pleasure to work with Harry in this course.

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2019S
Course: HACU-0217 Analog Electronic Music Synthesis
Instructor: Daniel Warner

COURSE DESCRIPTION

In this course we will study the concepts of basic analog electronic music synthesis. Students will gain hands-on, working knowledge of traditional hardware synthesizers in a studio setting. Topics to be covered are oscillators and basic waveforms, filters and musical timbre, voltage control, envelopes, gates and triggers, modulation, sequencing, control signal flow, and audio signal flow. We will learn how to synthesize acoustic sounds and create new electronic sounds by using additive/subtractive synthesis and various modulation techniques. In addition, students will study to the physical properties and behavior of sound in relation to electronic music.

INSTRUCTOR NARRATIVE

Haochen (Harry) Wang did very good work in this course. He attended class regularly and worked diligently to learn the basic principles of analog electronic music this semester. Harry completed the three projects with success. His music was among the best of the semester. In our in-class workshop sessions, he was a quick study who made good progress over the course of the semester. Harry comes away from this course with a good working knowledge of analog electronic music synthesis. Good work this term!

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2019S
Course: NS-0261 Calculus II
Instructor: Sarah Hews

COURSE DESCRIPTION

Calculus II: This course extends the concepts, techniques and applications of an introductory calculus course. We'll detect periodicity in noisy data, and study functions of several variables, integration, differential equations, and the approximation of functions by polynomials. We'll continue the analysis of dynamical systems taking models from student selected primary literature on ecology, economics, epidemiology, and physics. We will finish with an introduction to the theory and applications of Fourier series and harmonic analysis. Computers and numerical methods will be used throughout. In addition to regular substantial problem sets, each student will apply the concepts to recently published models of their choosing. Pre-requisites: Calculus in Context (NS 260) or another Calc I course

INSTRUCTOR NARRATIVE

Harry missed many classes this semester, but when he was in class, he was engaged and he worked solidly throughout the semester. A major component of the class was discovering calculus through explorations. He was willing to learn in this way and made progress in developing communication skills in mathematics. Harry completed most of the homework sets, but he did not take advantage of the opportunity to revise the assignments. In the major assessments, Harry included graphs that were sometimes accurate and included correct axes labels. His calculations were usually correct, and he demonstrated a strong understanding of the concepts. He was willing and able to apply his understanding of integrals to different applications. Harry should focus on more thorough explanations and interpreting solutions in the context of the problem. Harry is well prepared for future mathematics courses.

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2019S
Course: NS-0274 Linear Algebra
Instructor: Sarah Hews

COURSE DESCRIPTION

Linear Algebra: Linear Algebra: Linear algebra is valuable for explaining fundamental principles and simplifying calculations in Mathematics, Statistics, Computer Science, Engineering, Physics, Biology, and Economics. In this course, we will focus on different applications based on course design and student preferences. These will include applications to chemistry, cryptography, economics, genetics, geometry, geology, heat distributions, marketing, image compression, Markov chains and networks. They will be based on the study of linear equations, matrices, vector spaces, linear transformations, eigenvalues and eigenspaces, as well as others as time permits.

INSTRUCTOR NARRATIVE

Harry missed quite a few classes this semester, but he was engaged with the class activities when he attended and worked well with others. Harry turned in all of the homework assignments and showed a strong understanding of the content. In the major assessments, Harry showed a good understanding of notation, usually performed calculations correctly and demonstrated a good grasp of the concepts. Harry should just be careful with some of the finishing details, making sure there aren't any silly mistakes and checking his solutions.

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2019F
Course: HACU-0290 Electroacoustic Music I
Instructor: Daniel Warner

COURSE DESCRIPTION

This is a composition course that will also engage the history, theory, and practice of electro-acoustic music. The course will introduce the musical, technical, and aesthetic issues of electro-acoustic music, broadly construed to include the Classical avant-garde, Electronica, DJ culture, Ambient, etc. Digital recording, editing, and mixing will be covered using the Audacity, Logic, or ProTools programs. Students will also work with sampling and looping techniques using Ableton Live. Other topics to be covered include basic acoustics and synthesis techniques. Students will be expected to complete three composition projects during the course of the semester. Formal knowledge of music is helpful, but not required.

INSTRUCTOR NARRATIVE

Harry Wang did very good work in this course. He attended class regularly and shared his work. I agree with Harry's self-evaluation that he made "great progress in this class." His work has really grown and he demonstrated the ability to work in a variety of elctronica styles, from techno to chill down tempo to funk. His music is really improving with each project. Great work this term!

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2020F
Course: HACU-0200 Independent Study
Mixed Audio: Concepts, Practices and Tools
Instructor: Daniel Warner

INSTRUCTOR NARRATIVE

Haochen (Harry) Wang did a good job on this Independent Study project. He worked from a lengthy book on audio production, carefully reading and taking notes. After finishing the book, Harry spent the remainder of the semester working on four mixing projects. Harry has learned much during this Independent Study. He comes away from it with a really good grasp of basic audio production.

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2020F
Course: HACU-0201 Future Sounds: Exploring Electronica
Instructor: Daniel Warner

COURSE DESCRIPTION

This course introduces students to key concepts in the study of electronica. The course will teach students to think critically about electronica's social, historical, ideological and technological dimensions. Introductory lectures will examine the musics and establish introduce critical terminology, musical features, timelines, and analytical frameworks. Specific subgenres such as hiphop, house, techno, dub, ambient, trance, dubstep, jungle, and drum 'n' bass will be covered through readings, lectures, documentaries, and listening sessions. Students will be expected to complete weekly reading and listening assignments, in-class presentations, and undertake a small research/writing project. (keywords: electronica, electronic dance music, EDM, electronic music)

INSTRUCTOR NARRATIVE

Haochen (Harry) Wang did fine work in this course. He was enthusiastic about the course material and his article "unpacking" assignments were thoughtful and detailed. Harry has a good sense of the social and historical implications of this music. I really appreciated his comments in class discussions and listening sessions. His final project for the course was a very successful EDM composition. Harry comes away from the course with a really good grasp of the element of Electronic Dance Music. Good work this semester.

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Final Course Evaluation

Name: Haochen Wang
Year of Entry: 2018F

Term: 2021F
Course: NS-0240 Statistics
Instructor: Elizabeth Conlisk

COURSE DESCRIPTION

This course is an introduction to descriptive and inferential statistics with examples drawn primarily from the fields of medicine, public health, and ecology. The approach is applied and hands-on; students are expected to complete two problem sets each week, collect and analyze data as a class, and design and carry out their own examples of each analysis in four review exercises. We cover description, estimation and hypothesis testing (z-scores, t-tests, chi-square, correlation, regression, and analysis of variance). More advanced techniques such as multi-way ANOVA and multiple regression are noted but not covered in detail. We also discuss the role of statistics in causal inference though the emphasis of the course is on practical applications in design and analysis. The course text is The Basic Practice of Statistics by David S. Moore and the primary software is Minitab. There are no prerequisites and students of all levels and abilities are encouraged to enroll. Key Words: Statistics, Research Desgin, Quantitative Analysis

INSTRUCTOR NARRATIVE

Haochen (Harry) Wang produced very good work in this course and far exceeded my expectations in terms of learning and application. He was sometimes late with assignments and class arrival, but he clearly understood the material. His work was neat, confident and usually without error, even at the end of the semester when the material was more difficult, conceptually and computationally. He rarely had any questions in class and appeared to teach himself the basics of every chapter, plus some. For example, he wrote his own code in Python for conducting basic statistical tests and explored the calculus-based functions behind the various distributions. He clearly understood the underlying logic of inferential statistics. He did an especially good job on the four review exercises, appropriately applying the tests and concepts from multiple chapters to a dataset collected by the class. In sum, Harry has an excellent grasp of introductory statistics and should consider taking a more advanced course. He has the skills to do quite well.

Rachael Graham
Rachael Graham, Director of Central Records

HAMPSHIRE COLLEGE COURSE EVALUATIONS

Haochen Wang

Course: **2018F CS-173T Introduction to Data Science**
Instructor: **Ethan Meyers**

Instructor Narrative
Haochen (Harry) Wang did very good work in this class. Harry entered the class with a strong programming background so it was relatively easy for him to do well on the worksheets and DataCamp assignments. However, he did undertake some of the additional harder problems and it is clear that he learned how to effectively use the R programming language to analyze data. Harry also had thoughtful responses to the assigned readings to the data journalism readings, which showed that he was actively engaged with the material. Harry's data journalism, midterm and final project presentation were entertaining and generally well done, which demonstrated that he could effectively convey quantitative information. For his midterm project, Harry analyzed trends in the electronic music industry where he created a number of interesting and insightful plots, although the results could have been stronger had he paid a bit more attention to the details. For his final project, Harry analyzed Donald Trump's tweets. This project did a great job of finding interesting trends in the data and discussing them in the written report. In summary, Harry did very good work in this class, and I hope that he continues to apply what he has learned in future work.

Course: **2018F HACU-0119 Musical Beginnings**
Instructor: **Noah Horn**

Instructor Narrative
Harry Wang did well in Musical Beginnings. He grasped the core content of the course, and performed well on all of the assignments.

Harry had acceptable attendance, coming in well under the absence limit for the main classes, though pushing the limit by missing many of the ear training sessions. However, he acquired the expected skills in ear training, with his individual appointment featuring good scales, rhythm, and melodic contour. He has room for improvement in the usage of solfège. Harry's final evaluation was turned in quite late, but its contents showed that he understood the key concepts of music theory presented in the course.

Harry's final performance was a very interesting combination of three smaller compositions that he had written. His music was in the genre of electronic music, an effective change of pace from the rest of the class, and demonstrated an expert knowledge of creating music with computers. One fascinating component of the final project sampled the Philosophy of Liberty lecture well-known online and turned it into electronic music with a regular drumbeat.

Overall, Harry succeeded in Musical Beginnings. He was quiet, rarely speaking during class, but paid attention and clearly worked on mastering the concepts. His electronic music especially shows a lot of promise and he should continue working on that in the future.

Course: **2018F NS-0116 Math to Survive in the World**
Instructor: **Geremias Polanco Encarnacion**

Instructor Narrative
In this course, we focused on financial mathematics applied to personal finance. We studied the theory of interest including discount, simple and compound interest, present and future value, equations of value, annuities, etc. The aspects of personal finance included: financial planning, career planning, budgeting, use and misuse of credit, credit alternatives, purchasing and insuring,

HAMPSHIRE COLLEGE COURSE EVALUATIONS

Haochen Wang continued

investing fundamentals, and planning for retirement. Students studied chapters and summarized them, worked on daily problem sets, completed homework sets consisting of math problems, and chose a topic of interest to research with a focus on applying their newly acquired knowledge to the topic.

Harry attended class regularly and was engaged in the ongoing class discussion, contributing with questions, comments and constructive input. He completed all the homework as expected and made use of the resources available to facilitate or solidify his understanding. Harry's work on the skills check and homework showed that he had gained a solid understanding of the basic concepts treated in the course. We considered a few extremely challenging problems, but Harry was proactive in using the resources available and was able to obtain a pretty good understanding of most of them. The financial aspects of the course were very beneficial for Harry and he was able to fully grasp them. I think that overall Harry completed this course with excellence.

Course: **2018F NS-0206 Modern Physics**
Instructor: **Kaca Bradonjic**

Instructor Narrative
By the end of the semester, students were expected to be able to: identify the experiments that led to the development of modern physics and explain the key ways in which the new theories depart from classical physics; solve problems requiring the understanding of special relativity (time dilation, length contraction, etc.); solve problems requiring the understanding of the fundamental principles of quantum mechanics (uncertainty principle); show understanding of the application of relativity or quantum mechanics to a particular physical system (final project).

Haochen (Harry) Wang achieved satisfactory proficiency in the above-listed course goals. Having a strong background in physics, Harry did very well on the early assignments, which reviewed the material he already knew. But as we moved on to relativity and quantum mechanics, his performance declined. Harry attended most of the classes and participated in the in-class activities, but he frequently seemed tired and unable to focus. His written assignments often did not show the details of his calculations, though they did get progressively more thorough. At the end of the semester, he gave a solid presentation on particle physics. Harry, whose insightful questions and several excellent assignments clearly demonstrated his ability, should aim for quality over quantity when it comes to course scheduling, and adapt his study habits to the new process-centered learning environment.

Course: **2018F NS-0260 Calculus in Context (Calculus I)**
Instructor: **Sarah Hews**

Instructor Narrative
Harry consistently showed a good work ethic in "Calculus I." He attended most of the classes, though was sometimes late, engaged in the group work, and completed the homework assignments. Students were given the opportunity to revise homework assignments multiple times and Harry took advantage of this option when needed (which was rare). The take-home midterm and final highlighted Harry's understanding of calculus. Harry usually included clear graphs but should make sure that he labels his axes and includes important values. He showed a good understanding of mathematical notation that helped him perform calculations that were usually correct. He also demonstrated a very strong understanding of all the core concepts and was able to solve a wide range of word problems using derivatives. Harry should work on always including correct units and interpreting the answers in the context of the problem.

HAMPSHIRE COLLEGE COURSE EVALUATIONS

Haochen Wang continued

Given that Harry demonstrated a strong understanding of calculus throughout the semester, I expected him to complete the bonus questions on the final. He did not do so.

In the final project, Harry transitioned from exploring "how something is changing" to "why something is changing," engaging with differential equations and showing a more advanced understanding of calculus than is usual in a traditional "Calculus I" course. Using MATLAB, a multi-paradigm numerical computing environment, Harry worked with peers to demonstrate a dynamic understanding of a rabbit/fox system and showed a deep understanding of the core concepts of calculus -- local linearity and limits. Overall, Harry showed strong understanding in "Calculus I" and is well-prepared for "Calculus II."

HAMPSHIRE COLLEGE
Course Descriptions for Haochen Wang

Course: **2018F CS-173T Introduction to Data Science**
Instructor: **Ethan Meyers**

Description: With the rise of Internet and other new technologies, large datasets are now available that can give deep insights into questions about science, human nature, and society. However, to extract useful information from this data, powerful data analysis methods are needed. Data Science is a field that addresses this issue by using computational tools to gain insights from large datasets. In this class, students will learn how to apply Data Science methods, and the R programming language, to visualize, manipulate, and make predictions from data. Assignments will consist of weekly readings of data journalism articles, weekly problem sets to practice particular skills, and a midterm and a final project where students will explore a dataset in more depth. By the end of the class students will be able to visualize and analyze data in order to answer a range of interesting questions.

Course: **2018F HACU-0119 Musical Beginnings**
Instructor: **Noah Horn**

This course focuses on the broad fundamentals of western music and music theory, including music literacy (how to read western music notation). We will learn the theoretical concepts (pitch, rhythm, timbral nuances, texture, intervals, chords, harmony, etc.) and develop our sense of music cognition through ear training and solfege singing. This course will connect music to theory by teaching students how to compose music. Students will also attend concerts and write short reports. No prior music training or literacy is required. Students are required to attend one ear training class every week, either Monday or Thursday evening from 7:00-8:30pm.

Course: **2018F NS-0116 Math to Survive in the World**
Instructor: **Geremias Polanco Encarnacion**

Many factors determine whether or not you get a job, succeed or fail in a project, and loose or make money on an investment. Your problem-solving ability is one of them, but understanding the principles behind the situation you face (in practice or in theory) is one of the most fundamental. To survive in the world, people need to apply countless mathematical principles, consciously or unconsciously. In this course you will understand some of the mathematical principles that you already use, and will learn some other new ones. Topics will include minimizing time required to complete certain tasks; scheduling and critical path analysis; fair division; voting theory; coding theory; mathematics of investment and credit; art, beauty and math; and other topics at our discretion

Course: **2018F NS-0206 Modern Physics**
Instructor: **Kaca Bradonjic**

Modern Physics encompasses the major discoveries made in the early 20th century, which can be broadly divided into relativity and quantum mechanics. This course is a survey introduction to the special theory of relativity, the development of quantum theories of matter, light and their interactions, and the application of these theories to atomic, nuclear, and solid state physics. The topics covered will include special-relativistic mechanics, the atomic structure of matter, black body radiation, photo-electric efect, particle-wave duality, Schrodinger equation in one and three dimensions, and electron spin. The course is essential for students intending to pursue advanced physics courses on these topics and would be of interest to science students who want to gain a basic understanding of the foundations of modern physics.

HAMPSHIRE COLLEGE
Course Descriptions for Haochen Wang

continued

Course: **2018F NS-0260 Calculus in Context (Calculus I)**
Instructor: **Sarah Hews**

Calculus provides the language and some powerful tools for the study of change. As such, it is an essential subject for those interested in growth and decay processes, motion, and the determination of functional relationships in general. Using student-selected models from primary literature, we will investigate dynamical systems from economics, ecology, epidemiology and physics. Computers are essential tools in the exploration of such processes and will be integral to the course. No previous programming experience is required. Topics will include: 1) dynamical systems; 2) basic concepts of calculus -- rate of change, differentiation, limits; 3) differential equations; 4) computer programming, simulation, and approximation; 5) exponential and circular functions. While the course is self-contained, students are strongly urged to follow it up by taking NS 261-Calculus II to further develop their facility with the concepts. In addition to regular substantial problem sets, each student will apply the concepts to recently published models of their choosing.

HAMPSHIRE COLLEGE DIVISIONAL EVALUATIONS

Haochen Wang

Division II Evaluation

Title: **1. Music Tech(Music+Physics+CS) 2.Quantum Computing(PHY+CS) 3.AI Composer(MUS+CS)**

Committee Chairperson: **Kaca Bradonjic, Visiting Assistant Professor of Physics**
Committee Member: **Cynthia Gill, Associate Professor of Physiology**

Summary of Concentration

Haochen (Harry) Wang successfully completed a self-designed Division II concentration, with an impressive set of twenty-five courses, which can be divided in three parts: (a) thirteen courses in physics and mathematics, comprising the majority of an equivalent physics major (b) eight courses in music composition and production, with a focus on electronica, and (c) four courses in computer science, with an emphasis on machine learning and artificial intelligence.

Evaluative Comments

Although Haochen (Harry) Wang was always interested in physics, computer science, and music, his focus shifted over the course of the four semesters. He started with math and physics courses, but then became interested in using artificial intelligence to generate music, and subsequently pursued courses in computer science and music theory, composition, and production, particularly of electronic music. After having completed an internship in the music industry, he decided to shift his focus back to physics and returned to math and physics courses, while still continuing to take some composition and computer science classes. Despite overloading with coursework, Harry consistently achieved very high grades in math and physics, which is a testament to his strong aptitude for quantitative reasoning and physical sciences. His music courses note a series of successful projects in composition and production of musical pieces, most of them of electronica. Harry's evaluations across all four disciplines highlight his ability to achieve excellent results in independent projects and creative work. Based on his coursework, Harry is well prepared to pursue a Division III project in physics. His evaluations do mention that he could improve on documentation and presentation of his work, as well as participation in some of the class discussions. As scientific work involves collaboration and reporting of work, both orally and in writing, Harry should look for opportunities to practice these skills. While Harry has demonstrated himself to be able to handle enormous course loads and still do well, the committee will note that Division III research work requires much more focused attention and longer times than classwork and that Harry should be thoughtful about the choice of a Division III project early on and about spending time on additional courses and other projects. Overall, Harry showed himself to be an exceptional student.

Multiple Cultural Perspectives

Harry satisfied the Multiple Cultural Perspectives requirement by engaging with the issues of race and power in his music courses, in which he explored the origins, and the socio-political meaning and impact of hip-hop and rap music in the United States.

Community Engagement and Learning

In 2021, Harry worked as a signed producer and a resident DJ at I.N.T Music Record Label, Beijing, China. As part of that engagement, he taught an adult-education type course that included music production skills, DJ skills, beginner music theory for people with no background in music, and the history of development and the socio-political contetxt of certain genres, particularly as they relate to the racial minorities in the US. Most of this knowledge Harry learned in his music

HAMPSHIRE COLLEGE DIVISIONAL EVALUATIONS

Haochen Wang

classes at Hampshire, which he felt was important to share to wider audiences.

Division I Evaluation

Advisor: **Herbert Bernstein, Professor of Physics**

The Division I Program of Study

During the first two semesters of enrollment, first-year students must satisfactorily complete at least seven faculty-evaluated courses (which may include independent study), satisfying four of the five areas of distribution: Arts, Design and Media; Culture, Humanities, and Language; Mind, Brain, and Information; Physical and Biological Sciences; and Power, Community and Social Justice. In addition, students must carry out at least one Campus Engaged Learning Activity that involves a minimum of 40 hours of collaborative learning. Additionally, students must make satisfactory progress toward the first-year learning goals which provide them with the methodological and critical tools necessary for advanced work, including the development of writing skills, methods of quantitative analysis, the capacity for critical inquiry and art making, presentation skills, and the ability to do self-initiated academic work.

Advisor's Comments

Mr. Haochen (Harry) Wang has passed Division I with a total of three Hampshire courses in math, music and data science combined with much transfer "credit" in Japanese language and from previous International baccalaureate (IB) studies to satisfy the distribution requirement. HIs community engaged learning centered on outdoor program activities, including tennis and a sampler which connected area familiarization with rudimentary orienteering and survival skill building. These activities helped a city-raised student become more comfortable and feel at home in the College and its rural hills-and-dales, and somewhat forested setting.

Harry took many courses in his first year, which did lead to times of overwork, but he easily surpassed the requirements for Division I. Whether part of required courses or not, certain mathematics experiences were very important in Harry's first-year development and education. In Prof. Sarah Hews' mathematics classes he learned even from topics he'd previously covered and did three projects that helped master "elusive concepts in more comprehensible ways." Similarly his music electronic course led to future potential projects and a group of friends to pursue them with. And programming game theory gave him close contact with his coding team and the professor.

Harry shows presentation skills galore in music, mathematics and sciences; his physics and math amply demonstrate progress - and achievement - in quantitative skill as well. He offers work in pre-Hampshire Japanese language course(s) for English written expression but this is an arena mentioned in some evaluations as needing attention. We commend the writing center, library help at night, and "knowledge commons" for this follow-up which can develop rapidly if Harry submits enough pieces --formal and casual-- to one step of editorial assistance.

Overall this represents a good performance by a multi-interested and quite talented student. Harry took many courses in the first year, including as many as eight in STEM subjects, so much work will become part of higher division(s). Despite perhaps not completely focusing his interests, the personal goal of sorting through many possibilities was definitely engaged, and certain fields

UNIVERSITY OF MASSACHUSETTS AMHERST
AMHERST, MA 01003

Patrick Sullivan, University Registrar

Official Transcript - Non-Degree

Name: Haochen Wang
Student ID: 32554813
Birthdate: 06-19

Send To: Hampshire College

---------- Beginning of Non-Degree Enrollment ----------

Winter 2022

Program: Non-Degree UWW

Course	Description	Attempted	Earned	Grade
MATH 331	Ord Dif Eq/Sci Eng	3.0	3.0	A
PHYSICS 152	General Physics II	4.0	4.0	A

TERM GPA	4.000	TERM TOTALS	7.0
CUM GPA	4.000	CUM TOTALS	7.0

Summer 2022

Program: Non-Degree UWW

Course	Description	Attempted	Earned	Grade
COMPSCI 198C	P-Intro/C Programming Language	1.0	1.0	
E&C-ENG 124	Intro/Digital and Computer Sys	4.0	4.0	A

TERM GPA	4.000	TERM TOTALS	4.0
CUM GPA	4.000	CUM TOTALS	11.0

Career Totals:

CUM GPA	4.000	CUM TOTALS	11.0

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128 Sproul Hall #5404
Berkeley, CA 94720-5404

University of California, Berkeley

Walter Wong, University Registrar

Name: Wang,Haochen
Birthdate: 06/19/2000

Beginning of Undergraduate Coursework

2019 Summer

Program: Undergrad Non-Degree/NonFinAid
Major: Undeclared Summer Session Visitor

Course		Title	Att	Earned	Grade	Points
JAPAN	1	ELEM JAPAN INTENS	10.0	10.0	P	0.00
			Att	Earned	Gr Units	Points
Term GPA	0.000	Term Totals	10.0	10.0	0.0	0.00
Undergraduate Career Totals						
Cum GPA	0.000	Cum Totals	10.0	10.0	0.0	0.00

End of UC Berkeley Undergraduate Coursework

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