# Teaching Statement 

Lin Jiu

"Teaching and learning promote and enhance each other."
-The Book of Rite, Warring States period.
This Chinese quote on teaching and learning reveals the mutual benefit between them. Although I read it as a teenager, not until 2014, when I first taught as an instructor, did I finally begin to better understand the nature and connections between teaching and learning. There are several key concepts, such as

- motivation and inspiration: as William Arthur Ward said "The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires.";
- engagement, by, e.g., group discussion, asking and answering questions;
- systematical training plans and course designs, by organizing materials, setting appropriate homework assignments, quizzes, and tests;
- involvement of student research projects (, as my published my first paper as a junior student);
- and finally the cultivation in active pursuing.

For instance, teaching objects are no long restricted to course materials. Besides the basic definition, formulas, examples, etc., it is more important to foster a deeper understanding, to cultivate a self-independent learning, and to guide students with problem-solving skills. My ultimate goal is to cultivate the students necessary skills in problem solving, such as critical thinking and communication, and finally to guide the students into becoming self/independent math learners outside the classroom. TTo fulfill those goals, certain pedagogical strategies are applied.

1. Experiential teaching enriches the contents and activities in class. Besides traditional ones e.g., group discussion on problems with interactions, model tools, such as presentations on simulation demos, can catch the attention and stimulate students to further explore materials. Connecting a real-world problem to mathematical theory, not only encourages interdisciplinary learning for students; but also reveals the process of analyzing and solving real problems.
2. Research-driven teaching opens the door of higher-level research projects to undergraduate students. Some homework problems, especially in high level courses, are particularly selected. They are either directly from research projects or published papers, to offer the opportunity to the students participating certain projects; or are given in a literature review format, as the opening step to research topics. For example, presentation on topics related but beyond the teaching materials is one of such formats.
3. Ed-tech innovative teaching becomes increasingly a major part. The use of software such as Mathematica ${ }^{1}$ and SageMath ${ }^{2}$ is not restricted in presenting simulations and plots. Programming homework, dynamic notes, etc. always appear in my class.

## 1 Diverse and Abundant Experiences

Throughout all three institutes I have taught: Tulane University, Dalhousie University, and Duke Kunshan University, I experienced from private university, public university to the joint-venture liberal arts college. As shown in Appendix B, up to now, I have lectured (including current teaching ones)

[^0]- $\mathbf{2 3}$ sections, of 10 different regular math courses, including various levels of calculus, linear algebra, probability, complex analysis, and number theory, at three different institutes;
- $\mathbf{1}$ miniterm, i.e., 1 -week short course, and $\mathbf{5}$ independent study, i.e., reading courses, for completely different topics, e.g., combinatorics, analytic number theory, quantum computing, and algebraic geometry.
In general, for basic math courses, e.g. calculus, linear algebra, probability and statistics, I have no preference, as all such courses are essential and important to students majoring in STEM. Meanwhile, as my research topics include several branches, such as combinatorics, (analytic and algebraic) number theory, etc., many advanced courses, e.g., complex analysis, abstract algebra, also fit my area perfectly. Take MATH301-Advanced Introduction to Probability at Duke Kunshan University (DKU) as an example. This course was designed by me upon my arrival at DKU. Many ingredients were taken into consideration, including but not restricted to the seven-week session structure at DKU, undergraduate curriculum, related major requirements, and other courses. The course serves as an elective in math major, and also consists of important materials for further courses, such as MATH405-Financial Mathematics. Some research topics, e.g., probabilistic methods, Shor's algorithms in quantum computing are also introduced as the very end of the class.


## 2 Adjustment, Improvement, and Innovation

Teaching and learning is a dynamic process, so adjustment is required almost every single time. I am always willing to modify part of my teaching and adopt new already tested techniques into my course. This continuous adjustment encourages me to constantly reconsider the purpose and aims of the course and my teaching strategies. Moreover, comments on each course's evaluation are also helpful for improvement. The current average of the overall score and some comments show that I am a "good teacher"; still, there is room and space be become a better instructor. In order to constantly improve my teaching, I am also engaged in many activities. For instance, I led two sessions by the Center for Teaching and Learning (CTL) of DKU, on the usage of MaxHub ${ }^{3}$, a digital whiteboard in hybrid teaching; and WeBWorK ${ }^{4}$.

Also facilitated by the CTL, I was selected as one of the two instructors at DKU to conduct the Gradescope ${ }^{5}$ Research Project, awarded a grant of $\$ 2,000$. Gradescope is a digital grading system that allows instructors to scan and upload exams, and to grade them online. It reduces the grading time for classes of large size and digitizes the tests. Right now, I am selected as a member of Faculty Learning Community (FLC) 2022-2023, across all disciplines, to discuss and learn from each other in teaching.

Admittedly, there is always a distance from being a great teacher, and I am willing to constantly improve in teaching. As my experience growth, my teaching will be more effective, diverse, and innovative. My enthusiasm and commitment will never decrease.

## Appendix

## A Teaching Awards

| $2022.12-2024.06$ | Faculty Learning Community Grant | Duke Kunshan University |
| :--- | :--- | :--- |
| Gradescope Research Project Grant |  |  |
|  | Facilitated by Center for Teaching and Learning at Duke Kunshan University <br> Gradescope for math courses. |  |
| $2022.01-2022.12$ | Excellent Graduate Student Teacher | Math Dept., Tulane Univ. |

[^1]
## B Teaching Experience

| Duke Kunshan University |  |  |
| :---: | :---: | :---: |
| 2023 Fall | MATH 105 | Calculus |
|  | MATH 202 | Linear Algebra |
|  | MATH 105 | Calculus |
|  | MATH 301 | Advanced Introduction to Probability |
| 2023 Spring | MATH 205 | Probability and Statistics |
|  | MINITERM 102 | Experimental Mathematics and Symbolic Computation |
| 2022 Fall | INDSTU 391 | Introduction to Algebraic Geometry |
|  | MATH 105 | Calculus |
|  | MATH 306 | Number Theory |
|  | MATH 301 | Advanced Introduction to Probability |
| 2022 Spring | INDSTU 391 | Variational Quantum Algorithms |
|  | MATH 201 | Multivariable Calculus |
|  | MATH 301 | Advanced Introduction to Probability |
|  | MATH 201 | Multivariable Calculus |
| 2021 Fall | MATH 105 | Calculus |
|  | INDSTU 391 | Riemann Zeta-Function |
|  | INDSTU 391 | Quantum Algorithm |
|  | MATH 306 | Number Theory |
|  | INDSTU 391 | Combinatorics |
| 2021 Spring | MATH 205 | Probability and Statistics |
|  | MATH 301 | Advanced Introduction to Probability |
| 2020 Fall | MATH 105 | Calculus |
|  | MATH 201 | Multivariable Calculus |
| DALHOUSIE UNIVERSITY |  |  |
| 2019 Summer | MATH 1030 | Matrix Theory and Linear Algebra I |
| 2019 Winter | MATH 3080 | Introduction to Complex Variables |
| Tulane University |  |  |
| 2016 Spring | MATH 1060 | Long Calculus II |
| 2015 Fall | MATH 1310 | Consolidated Calculus |
| 2015 Spring | MATH 1210 | Long Calculus I |
| 2014 Summer | MATH 1160 | Long Calculus II |

## Semester 3 Spring 2022

Lectures：
MoTuWeTh：13：15－－14：30
Recitations：MoWe 7：15－8：15
Academic credit： 4 DKU credits
Instructor＇s information
Dr．Lin Jiu：
Email：
Office：
Office Hours：

Lecturer of Mathematics，Duke Kunshan University Assistant Professor of the Practice，Duke University
lin．jiu＠dukekunshan．edu．cn
CC2057
Mondays and Tuesdays 14：30－16：00 CC2057
Wednesday 20：00－21：00 Online 95272012990
or by appointment

## Teaching Assistants（for recitation，WeBWork，\＆Mathematica）

Edward Yue Office Hours

Lunji Zhu
Office Hours

Heng．Yue＠dukekunshan．edu．cn
Fridays 20：30－21：30
Linji．Zhu＠dukekunshan．edu．cn
Tuesdays 20：30－21：30

Zoom 96976215376

Zoom 8019763007

## ZOOM PASSCODE：MATH201

## What is this course about？

This course is a continuation of MATH 101／105 in which essential topics and concepts of single variable calculus are introduced．We live in a three－dimensional world．Whether to fully understand Kepler＇s Laws of planetary motion discovered four hundred years ago，or the two linked，intertwined parallel helixes as the structure of the DNA molecule discovered in the 1950s，whether to calculate atmospheric pressure at a given time which is a function of longitude and latitude，or to find the rate of fluid flow across a surface，and to answer many more questions in physical and social life sciences related to multi－dimensional structures， multivariable calculus is the course to start from．Main topics of this course include vectors and vector functions，the geometry of higher dimensional Euclidean spaces，partial derivatives，multiple integrals，line integrals，vector fields，Green＇s Theorem，Stokes＇Theorem and the Divergence Theorem．

## What background knowledge do I need before taking this course？

Prerequisite：MATH 101／105．

## What will I learn in this course？

Upon successful completion of the course，students will be able to
－Parametrize plane and space curves，surfaces．
－Curves in polar coordinates
－Interpret real－world situations in terms of related multivariable calculus concepts．
－Understand the concept of vectors and its connection to physics，apply operations on vectors

- Algebraically and geometrically, calculate the dot product and the cross product of vectors.
- Develop analytical and computational skills required for working with lines, curves, planes, and surfaces in space
- Find limits, partial derivatives, directional derivatives, tangent plane, linear approximation and the gradient of functions of several variables
- Understand the definitions of double integrals, triple integrals, line integrals, and surface integrals;
- Recognize and implement appropriate techniques to evaluate them, and apply them to solve
- Apply the Fundamental Theorem of Line Integrals, Green's Theorem, Stokes' Theorem, and the Divergence Theorem, to simplify integration problems.


## What will I do in this course?

The course will be comprised of video lectures, synchronous meetings dedicated to problem solving and lecturing, assigned readings, homework, and exams.

How can I prepare for the class sessions to be successful?
To succeed, students should be prepared to devote several hours to this course on a daily basis. They are strongly encouraged to use the online tutoring resources of ARC, to work with classmates, and to contact instructors in a timely manner for additional help as needed.

## What required texts, materials, and equipment will I need?

"Calculus, Volume III" , by OpenSTAX.
Find it HERE or on Sakai/Resources

## What optional texts or resources might be helpful?

Any multivariate calculus book can be used as a supplement for more practice problems.
How will my grade be determined?

1. Homework:
24\% (=4\% $\times 6$ )

- HW1 due Apr. 02 23:59
- HW2 due Apr. 09 23:59
- HW3 due Apr. 16 23:59
- HW4 due Apr. 23 23:59
- HW5 due Apr. 30 23:59
- HW6 due May 07 23:59
- HW7 due May 11 23:59

2. Quizzes: $8 \%(=2 \% \times 4)$
3. Formula Sheet: $1 \%$
4. Mathematica Project: $12 \%$
5. Midterm: 20\%
Apr. 13 \& $14 \quad$ Lecture Time
6. Final exam: 35\%

Please refer to the following scale for your grading. This is also subject to change, based on the overall performances of the whole class.
$\mathbf{A}+=98.00 \%-100 \% ; \quad \mathbf{A}=93.00-97.99 \% \% ; \quad \mathbf{A}=90.00 \%-92.99 \% ;$
B+=87.00\%-89.99\%; B = 83.00\% - 86.99\%; B- = 80.00\% - 82.99\%;
C+=77.00\%-79.99\%; C = 73.00\% - 76.99\%; C = 70.00\% - 72.99\%;
D+=67.00\%-69.99\%; $\mathbf{D}=63.00 \%-66.99 \% ;$ D- $=60.00 \%-62.99 \%$;
F =59.99\% and below.

Remarks: In case of documented illness or family emergency or documented University sponsored trips, you may miss the midterm, but the supporting documentation must be submitted to the instructor in advance. With the document, your missing midterm score can be counted as the same as your final. Do remember: let me know BEFORE the exam. An unexcused absence from any exam will be counted as a zero.

Homework. Weekly homework will be assigned each Thursday and will be due on the following Saturday mindnight, except for the last week. We will use the WeBWork system for homework assignments. No late homework will be accepted. Each homework problem set is worth $4 \%$ and the LOWEST one will be dropped.

Quiz. Weekly quiz will be assigned each week during the last lecture day of each week, except for the weeks of Midterm and the $1^{\text {st }}$ week. Each quiz will be counted $2 \%$ and the LOWEST one will be dropped.

Midterm. The midterm is scheduled in the $4^{\text {th }}$ week and it will be separated into two parts:

- The first part is assigned via WeBWorK, during the first 25 mins of the lecture on April $13^{\text {th }}$; (5\%)
- and the second written part is on April $14^{\text {th }}$, lecture time. (15\%)

Midterm covers all the materials from Week 1 to Week 3.
Final Exam. May 12th, 2022, 16:00-18:00, (AB 2107 well.... Just in case)
Due to the current situation, the final exam will be online and open-book. (Therefore, the $2 \%$ of formula sheets is added to the project). An announcement will be made in the $7^{\text {th }}$ week, on more details about the final exam. It will be on Sakai->Tests\&\&Quizzes (instead of Gradescope, though I will grade your submissions via Gradescope).

Formula Sheet. You are REQUIRED to prepare ONE piece of formula sheet for the midterm, and it can have at maximum an A4 size, double sided. Brining more pieces or larger size of sheets, will be considered as cheating, and leads to $\mathbf{0}$ for the corresponding test. This piece is worth $1 \%$. Note that this is not automatically given: if you failed or forgot to turn in your formula sheet, you will lose the point.

Mathematica Project. We shall form 10 groups, with each group consisting of 3-4 students. A list of projects will be given in the $4^{\text {th }}$ week and each group should pick one by the end of $5^{\text {th }}$ week. First come first served. The deadline for submitting the programming file is May $14^{\text {th }}$, NOON. Plagiarism of the code will lead to 0 for the project.

## What are the course policies?

Collaboration with peers on homework is allowed, but solutions are to be written individually. You are not allowed to use other books/online resources. Late homework will not be accepted.

We do not give make-up exams for any reason if you miss a midterm exam. Thus, missing an exam is a very serious matter. An unexcused delay in taking any exam will be counted as a zero. Excuses may be accepted, at the discretion of the instructor, and any alternative arrangements must be made well in advance.

## Academic Integrity:

As a student, you should abide by the academic honesty standard of the Duke Kunshan University. Its community Standard states: "Duke Kunshan University is a community comprised of individuals from diverse cultures and backgrounds. We are dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, respect, and accountability. Members of this community commit to reflecting upon and upholding these principles in all academic and non-academic endeavors, and to protecting and promoting a culture of integrity and trust." For all graded work, students should pledge that they have neither given nor received any unacknowledged aid.

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## Academic Policy \& Procedures:

You are responsible for knowing and adhering to academic policy and procedures as published in University Bulletin and Student Handbook. Please note, an incident of behavioral infraction or academic dishonesty (cheating on a test, plagiarizing, etc.) will result in immediate action from me , in consultation with university administration (e.g., Dean of Undergraduate Studies, Student Conduct, Academic Advising). Please visit the Undergraduate Studies website for additional guidance related to academic policy and procedures. Academic integrity is everyone's responsibility.

## Academic Disruptive Behavior and Community Standard:

Please avoid all forms of disruptive behavior, including but not limited to: verbal or physical threats, repeated obscenities, unreasonable interference with class discussion, making/receiving personal phone calls, text messages or pages during class, excessive tardiness, leaving and entering class frequently without notice of illness or other extenuating circumstances, and persisting in disruptive personal conversations with other class members. Please turn off phones, pagers, etc. during class unless instructed otherwise. If you choose not to adhere to these standards, I will take action in consultation with university administration (e.g., Dean of Undergraduate Studies, Student Conduct, Academic Advising).

## Academic Accommodations:

If you need to request accommodation for a disability, you need a signed accommodation plan from Campus Health Services, and you need to provide a copy of that plan to me. Visit the Office of Student Affairs website for additional information and instruction related to accommodations.

## What campus resources can help me during this course?

## Academic Advising and Student Support

Please consult with me about appropriate course preparation and readiness strategies, as needed. Consult your academic advisors on course performance (i.e., poor grades) and academic decisions (e.g., course
changes, incompletes, withdrawals) to ensure you stay on track with degree and graduation requirements. In addition to advisors, staff in the Academic Resource Center can provide recommendations on academic success strategies (e.g., tutoring, coaching, student learning preferences). Please visit the Office of Undergraduate Advising website for additional information related to academic advising and student support services.

## Writing and Language Studio

For additional help with academic writing-and more generally with language learning-you are welcome to make an appointment with the Writing and Language Studio (WLS). You can register for an account, make an appointment, and learn more about WLS services, policies, and events on the WLS website. You can also find writing and language learning resources on the Writing \& Language Studio Sakai site.

## IT Support

If you are experiencing technical difficulties, please contact IT:

- China-based faculty/staff/students 400-816-7100, (+86) 0512-3665-7100
- US-based faculty/staff/students (+1) 919-660-1810
- International-based faculty/staff/students can use either telephone option (recommend using tools like Skype calling)
- Live Chat: https://oit.duke.edu/help
- Email: service-desk@dukekunshan.edu.cn

What is the expected course schedule?

## Tentative, Subject to Change

| Week 1 | $\bullet$ | Parametric Equations |
| :--- | :--- | :--- |
| (Mar. 21- | $\bullet$ | Calculus of Parametric Curves |
| Mar. 24) | $\bullet$ | Polar Coordinates |
| Week 2 | $\bullet$ | Vectors |
| (Mar. 28- | $\bullet$ | Dot product |
| Apr. 2) | $\bullet$ | Cross product |
|  | $\bullet$ | Equations of lines and planes |
|  | $\bullet$ | Vectors functions and space curves |
|  | $\bullet$ | Derivatives and integrals of vector functions |
|  | $\bullet$ | Arc lengthArc length function and parametrization with respect to arc length |
|  | $\bullet$ | Curvature |
|  |  |  |


| Week 3 | $\bullet$ | Motion in space: velocity and acceleration |
| :--- | :--- | :--- |
| (Apr. 6-Apr. | $\bullet$ | Functions of several variables |
| 7) | $\bullet$ | Limits and continuity |
|  | $\bullet$ | $1^{\text {st }}$ Order Partial derivatives |
| Week 4 | $\bullet$ | Higher-order Partial derivatives |
| (Apr. 11- | $\bullet$ | Tangent planes and linear approximations |
| Apr. 14) | $\bullet$ | The Chain Rule |
|  | $\bullet$ | Directional derivatives and the gradient vector |
| Week 5 | $\bullet$ | Maximum and minimum values |
| (Apr. 18- | $\bullet$ | Double integrals over rectangles |
| Apr. 21) | $\bullet$ | Iterated integrals |
| Week 7 | $\bullet$ | Double integrals over general regions |
| (May 4-May | $\bullet$ | Surface integrals |
| 7) | $\bullet$ | Curl and divergence |



## Duke University - Duke Kunshan University <br> SP22S4 DKU UG End of Session Course Evaluations

Course: 7W2-MATH-201-003: Multivariable Calculus
Instructor: Lin Jiu *
Response Rate: $\quad 16 / 30$ ( $53.33 \%$ )





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2 - How many hours per week, on average, did you spend in and out of class for this course (including attending synchronous/live meetings and office hours, as well as working on homework/assignments, course recordings, and course materials)?




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SP22S4 DKU UG End of Session Course Evaluations

| Course: | 7W2-MATH-201-003: Multivariable Calculus |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Instructor: | Lin Jiu * |  |  |  |  |  |  |  |  |  |
| Response Rate: | 16/30 (53.33 \%) |  |  |  |  |  |  |  |  |  |
| 5 - The pace of the course was |  |  |  |  |  |  |  |  |  |  |
| Response Option |  | Weight | Frequency | Percent | Percent | Respo |  |  |  |  |
| Too slow for me |  | (1) | 0 | 0.00\% |  |  |  |  |  |  |
| Slow but engaging |  | (2) | 0 | 0.00\% |  |  |  | 3.44 |  |  |
| Just right for me |  | (3) | 11 | 68.75\% |  |  |  |  |  |  |
| Fast but manageable |  | (4) | 3 | 18.75\% |  |  |  |  |  |  |
| Too fast for me |  | (5) | 2 | 12.50\% | $\square$ |  |  |  |  |  |
|  |  |  |  |  | 25 | 50 | 100 | Question |  |  |
| Response Rate |  |  |  |  | Mean |  |  | STD |  | Median |
| 16/30 (53.33\%) |  |  |  |  |  | 3.44 |  |  | 0.73 | 3.00 |


| 6 - Which assignment or activity would you most recommend the instructor to use again when teaching the course in the future and why? |  |
| :--- | :--- |
| Response Rate | $4 / 30(13.33 \%)$ |
| • webwork homework, lectures using textbook examples |  |
| - The quiz every week focus on the material last week. I think it is a good way to have a quick review. |  |
| - the mini project is interesting |  |
| - The homeworks were a great way to review the contents every week. |  |


| 7 - Which assignment or activity could be improved and how? |  |
| :--- | :--- |
| Response Rate | $4 / 30(13.33 \%)$ |
| • no suggestion |  |
| - Sometimes it take a little bit long to code on Mathemetica in class. Professor can leave us an answer and we try ourselves after class. |  |
| • When the professor used mathematica to teach the course, we had difficulty catching up with him. I think writing notes by hand is still a more acceptable way for students. |  |
| - there was little time to do the midterm considering to the amount of questions |  |

8 - Please use a five-point scale (5="A great deal", 1="Nothing") to indicate how much you learned from this course in general.


## 9 - Please rate the following statements on a scale of 5 (strongly agree) to 1 (strongly disagree).

This course helped me gain factual knowledge.

| Response Option | Weight | Frequency | Percent | Percent Responses |  |  | Means |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Strongly Agree | (5) | 12 | 75.00\% | $\square$ |  |  |  |  |  |
| Agree | (4) | 2 | 12.50\% |  |  |  | 4.63 |  |  |
| Neutral | (3) | 2 | 12.50\% |  |  |  |  |  |  |
| Disagree | (2) | 0 | 0.00\% |  |  |  |  |  |  |
| Strongly Disagree | (1) | 0 | 0.00\% |  |  |  |  |  |  |
| Not applicable | (0) | 0 | 0.00\% |  |  |  |  |  |  |
|  |  |  |  | 025 | 50 | 100 | Question |  |  |
| Response Rate |  |  |  | Mean |  |  | STD |  | Median |
| 16/30 (53.33\%) |  |  |  | 4.63 |  |  | 0.72 |  | Median |

Duke University - Duke Kunshan University
SP22S4 DKU UG End of Session Course Evaluations

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7W2-MATH-201-003: Multivariable Calculus
Instructor:
Lin Jiu *
Response Rate: 16/30 (53.33 \%)





Duke University - Duke Kunshan University
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Duke University - Duke Kunshan University
SP22S4 DKU UG End of Session Course Evaluations

## Course:

7W2-MATH-201-003: Multivariable Calculus
Instructor:
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Response Rate: 16/30 (53.33 \%)





Duke University - Duke Kunshan University
SP22S4 DKU UG End of Session Course Evaluations

Course:
Instructor: 7W2-MATH-201-003: Multivariable Calculus

Response Rate: 16/30 (53.33 \%)

| Response Rate | 1/30 (3.33\%) |
| :---: | :---: |

13 - This question is about Prof. Lin JiuPlease rate the following statements about Prof. Lin Jiu on a scale of 5 (strongly agree) to 1 (strongly disagree). Ideas and concepts were explained by the instructor clearly.


13 - This question is about Prof. Lin JiuPlease rate the following statements about Prof. Lin Jiu on a scale of 5 (strongly agree) to 1 (strongly disagree). I was encouraged to participate in course discussions and activities.


13 - This question is about Prof. Lin JiuPlease rate the following statements about Prof. Lin Jiu on a scale of 5 (strongly agree) to 1 (strongly disagree). -
The class atmosphere was comfortable and my contribution was respected.


Duke University - Duke Kunshan University
SP22S4 DKU UG End of Session Course Evaluations

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Response Rate: $\quad 16 / 30$ ( $53.33 \%$ )



14 - This question is about Prof. Lin JiuAny other comments or suggestions for Prof. Lin Jiu? -

| Response Rate | $7 / 30$ (23.33\%) |
| :--- | :--- |

- clear marking scheme and very understanding of students' situations, was very helpful in explaining questions
- I am really grateful for so many office hours provided. It helps me a lot especially we take all the courses online this session
- Nice professor, being earnest and kind
- He is so niceeeeee! He really takes his students into consideration
 his courses again in the future.
- Be more kind please.
- Great Professor, always available
15 - About Online LearningPlease provide comments and/or suggestions on any aspects of your online learning experience this term.

| Response Rate | 3/30 (10\%) |
| :---: | :---: |
| - since my peers in China/on as an international student | so experienc |
| - Sometimes because the whit | d, the time is |
| - Professor Lin did a great job | ation |

## MATH 105 Section 4

## Calculus



## Fall 2022，Session 2

Dates／Synchronous meeting time：MoTuWeTh 11：45－13：00 AB2107（Zoom： 9485530 9514）
Recitation：TuTh 7：15—8：15 IB 1046／1047
Academic credit：
Hybrid course format：
4

ZOOM PASSCODE：
video，lecture，recitation
MATH105

Instructor＇s information
Dr．Lin Jiu
Email：
Lecturer of Mathematics，Duke Kunshan University
Assistant Professor of the Practice，Duke University
lin．jiu＠dukekunshan．edu．cn
Office：
Office Hours：

Mon 20：00－21：00 Zoom Only（93594377559）
Wed 10：00－11：00 Office Only
or by appointment

## Teaching Assistants

Recitation：Tuesday and Thursdays，7：15－8：15，IB1046／1047

Heng Yue
Fridays：13：30－－－14：30
Lunji Zhu
Monday 7：30－－－8：30am
Yidan Mao
Monday 13：30－－－14：30
Shuhan Li
Thursday 19：00－－－20：00

## Test Grading

Xintang Wang
heng．yue＠dukekunshan．edu．cn Zoom 9845325312，IB 1052

Lunji．zhu＠dukekunshan．edu．cn
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## Course Outline

We will cover most of the following materials from the textbook（Tentatively，may up to some perturbation）．

| Week 1 | $\bullet$ | Syllabus |
| :--- | :--- | :--- |
| （Oct．24－28） | $\bullet$ | Limits（1．2．2，1．2．3）． |
|  | $\bullet$ | Continuity（1．2．4）． |


| Week 2 <br> (Oct. 31- <br> Nov. 4) | Derivatives and Differentiation Rules (1.3.1-1.3.4, including essential formulas from 1.3.5 and 1.3.9). <br> - Chain Rule (1.3.6). <br> - Derivatives of Inverse Functions (1.3.7). <br> - Implicit Differentiation (1.3.8). <br> - Related Rates (1.4.1). <br> - Linear Approximations (1.4.2). |
| :---: | :---: |
| Week 3 <br> (Nov. 7--11) | - Maxima and Minima (1.4.3). <br> - Mean Value Theorem (1.4.4). <br> - Derivatives and the Shape of a Graph (1.4.5). <br> - Asymptotes (1.4.6). <br> - Optimization (1.4.7) <br> Midterm I, Nov. 10 ${ }^{\text {th }}$ 11:45-13:00 (Coverage: First TWO Weeks, AB 2107/1079) |
| Week 4 <br> (Nov. 14--18) | - L'Hospital's Rule (1.4.8). <br> - Antiderivatives (1.4.10). <br> - Integration includes the Fundamental Theorem of Calculus (1.5.3) and the Net Change Theorem (1.5.4). <br> - Integrals Involving Exponential and Logarithmic Function (1.5.6). <br> - Integrals Resulting in Inverse Trigonometric Functions (1.5.7). |
| Week 5 <br> (Nov. 21--25) | - Substitution (1.5.5). <br> - Integration By Parts (2.3.1). <br> - Trigonometric Integrals (2.3.2). <br> - Trigonometric Substitution (2.3.3). |
| Week 6 <br> (Nov. 28- <br> Dec. 2) | - Partial Fractions (2.3.4). <br> - Other Strategies (2.3.5) <br> - Improper Integrals (2.3.7). <br> Midterm II , Dec. $1^{\text {st }}$ 11:45-13:00 (Coverage: WEEK 3-5, AB 2107/1079) |
| Week 7 | - Differential Equations (2.4.1, 2.4.2) |


| (Dec. 5-9) | $\bullet$ | Solving differential equations (2.4.3-2.4.5) |
| :--- | :--- | :--- |
|  | $\bullet$ | Parametric equations and parametric curves (2.7.1-2.7.2) |
|  | $\bullet$ | Review (if time permits) |
|  |  |  |

## Final Exam <br> December $14^{\text {th }}$, Wednesday, 15:30—18:30, AB 1079 \& AB1087

## References for this Course

Calculus, Volume I, by OpenSTAX. https://openstax.org/details/books/calculus-volume-1 Calculus, Volume II, by OpenSTAX. https://openstax.org/details/books/calculus-volume-2 Grading Policy

- Midterm I: Thur. Nov. 10, 11:45-13:00 (during lecture time) $(13 \%+0.5 \%$ (formula sheet))
- Midterm II: Thur. Dec. 1, 11:45-13:00 (during lecture time) ( $13 \%+0.5 \%$ (formula sheet))
- Final: Dec. 12th ( $40 \%+1 \%$ (formula sheets))
- Homework: Weekly, WeBWork ( $4 \% * 6=24 \%$ )
- Quiz: Weekly, during Thursday's lecture (8\%)
$\mathbf{A}+=98 \%-100 \% \mathbf{A}=93 \%-97.99 \% ; \mathbf{A}=90 \%-92.99 \% ; \mathbf{B}+=87 \%-89.99 \% ; \mathbf{B}=83 \%-86.99 \% ; \mathbf{B}-=$ 80\%-82.99\%; C+ = 77\%-79.99\%; C = 73\%-76.99\%; C- = 70\% - 72.99\%; $\mathbf{D}+=67 \%-69.99 \% ; \mathbf{D}=$ 63\% - 66.99\%; D- = 60\% - 62.99\% F = 59.99\% and below

As you can see, the final percentage will be rounded DOWN to the closest integer.

## Remarks:

In case of documented illness or family emergency or documented University sponsored trips, you may miss the midterm, but the supporting documentation must be submitted to the instructor in advance. With the document, your missing midterm score can be counted as the same as your final. Do remember: let me know BEFORE the exam. An unexcused absence from any exam will be counted as a zero.

## Homework

Weekly homework will be assigned each Thursday and will be due on the following Thursday's lecture, except for the last week. We will use the new WeBWork system for homework assignments. No late homework will be accepted. Each homework problem set is worth 4\% and the LOWEST one will be dropped.

| Homework <br> Assignment | Latest Release Date \& Time(+8, <br> Tentative) | Due Date \& Time (+8) |
| :--- | :--- | :--- |
| HW1 | Thursday, Oct. 29, 2022, Before 23:59 | Saturday, Nov. 5, 2022, 23:59 |
| HW2 | Wednesday, Nov. 9, 2021, Before 23:59 | Saturday, Nov. 19, 2022, 23:59 |
| HW3 | Thursday, Nov. 17, 2022, Before 23:59 | Saturday, Nov. 26, 2022, 23:59 |
| HW4 | Thursday, Nov. 24, 2022, Before 23:59 | Saturday, Dec. 2, 2022, 23:59 |
| HW5 | Wednesday, Nov. 30, 2022, Before 23:59 | Saturday, Dec. 10, 2021, 23:59 |
| HW6 | Wednesday, Dec. 8, 2021, Before 23:59 | Monday, Dec. 12, 2021, 23:59 |
| HW7 |  |  |

## Quiz

Weekly quiz will be assigned each week during Thursday's lectures, except for the weeks of Midterm tests. Each quiz will be counted $2 \%$. The lowest will be dropped. Annoucements will be made to explain the coverage of each quiz.

## Midterm and Final Exam

For each of the midterms, you are allowed to bring ONE A4 size formula sheet (double sided) and for the final exam, you are allowed to bring TWO pieces; When turning in your answer sheets, formula sheet(s) should also be included and each piece will be given $0.5 \%$.

## Academic Integrity:

## This is very important!

Any misconduct behavior on homework, including but not limited to copying another student's homework paper, copying a solution found in another book or notes or website will, at minimum, result in a zero on that assignment and may result in a failing grade for the course. The incident will be reported to the Dean of Students.
The penalty on misconduct behavior on exam will be much more severe.

## Academic Policy \& Procedures:

You are responsible for knowing and adhering to academic policy and procedures as published in University Bulletin and Student Handbook. Please note, an incident of behavioral infraction or academic dishonesty (cheating on a test, plagiarizing, etc.) will result in immediate action from me, in consultation with university administration (e.g., Dean of Undergraduate Studies, Student Conduct, Academic

Advising). Please visit the Undergraduate Studies website for additional guidance related to academic policy and procedures. Academic integrity is everyone's responsibility.

## Academic Disruptive Behavior and Community Standard:

Please avoid all forms of disruptive behavior, including but not limited to: verbal or physical threats, repeated obscenities, unreasonable interference with class discussion, making/receiving personal phone calls, text messages or pages during class, excessive tardiness, leaving and entering class frequently without notice of illness or other extenuating circumstances, and persisting in disruptive personal conversations with other class members. Please turn off phones, pagers, etc. during class unless instructed otherwiself you choose not to adhere to these standards, I will take action in consultation with university administration (e.g., Dean of Undergraduate Studies, Student Conduct, Academic Advising).

## Academic Accommodations:

If you need to request accommodation for a disability, you need a signed accommodation plan from Campus Health Services, and you need to provide a copy of that plan to me. Visit the Office of Student Affairs website for additional information and instruction related to accommodations.

Duke University - Duke Kunshan University
FA22S2 DKU UG End of Session Course Evaluations

Course:
7W2-MATH-105-004: Calculus
Instructor:
Lin Jiu *
Response Rate: $\quad$ 47/60 (78.33 \%)





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2 - How many hours per week, on average, did you spend in and out of class for this course (including attending synchronous/live meetings and office hours, as well as working on homework/assignments, course recordings, and course materials)?




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## 6 - Which assignment or activity would you most recommend the instructor to use again when teaching the course in the future and why?

| Response Rate | $20 / 60$ (33.33\%) |
| :--- | :--- |

- Choosing the week 7 teaching materials by ourselves.
- discussion group is most attractive thing
- No, thanks
- Regular Homework. The quantity is suitable and quality is high and is really helpful to understanding the knowledges.
- week7
- let students to vote for the contents of Week7
- I like the assignments on Webork, because I can have enough practice after classes. I like doing math homework.
- Weekly quizzes
- The homeworks, very useful and good exercises.
- The quiz is practical for understanding key concepts
- All the assignments are well set. I highly recommend professor to just keep what he is doing now
- Combine the online quiz and handwriting test.
- The homework assignments, although long, were useful to practice the different methods. Made it easier to know how to approach a problem during an exam.
- I really like the two scavenger hunts. I think they are really interesting, I was given the chance to take a closer look at DKU and I've noticed some things that I never paid attention to before.
- Assignment on trignometric substitution. It is a good exercise of both integration by parts and trignometric identities.
 I appreciate that at least we have 3 chances to perform well in an exam setting, as we have 3 exams ( 2 midterms and a final)
- BE A GOOD PERSON WITHOUT DOING BAD THINGS AND TALKING TO STUDENTS LIKE YOU PREVIOUSLY DO
- Quizzes on thursdays. It helps me review the class content last week very well.
- Giving more examples of the materials
- Mini quiz

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| 7 - Which assignment or activity could be improved and how? |  |
| :--- | :--- |
| Response Rate | $21 / 60(35 \%)$ |
| - Maybe leave one hard problem for each class. We can work it out together in a group. |  |
| - the examination can add difficulty |  |
| - I think the recitation could be used to talk about some challenging problems in homework, we can learn a lot from those problems even if we figure it out at the first time. |  |
| - some solutions of problems of the assignment are not mentioned in class |  |
| - no |  |
| - Nothing. |  |
| - If the quizzes were harder, then there wouldn't be such a difference in the level of difficulty between the quizzes and the exams. |  |
| - The midterms, more time should be given or less exercises. I didn't have time to finish them. |  |
| - Sometimes the assignments are weird due to the random number produced by the website. And some tasks are tricky that do not help to understand the content. |  |
| - From my perspective, I do think almost everything is perfect. If there is one thing that need to be improved, it should be the teaching assistants. |  |
| - The recitation could cover some homework problems. |  |
| - The Midterms were quite long, but it is expected for a course of this level. |  |
| - I think they are all great. Maybe if some assignments are given more time to prepare would be even nicer. |  |
| - Assignment on linear approximation, some questions ate vague. |  |
| - Same answer as above. Additionally, some activities beyond just exams or quizzes would be deeply appreciated. |  |
| - attitude |  |
| - maybe professor or recitation course can provided some time to solve the homework problems. |  |
| - Maybe answers for homeworks should be visible as soon as our attempts go to zero. |  |
| - Some steps are skipped when solving the problems so I wish you can solve them slowly with more explanation |  |
| - Homework questions are too much. It could be more effective if the questions are $20-30$. |  |
| - less homework on webwork |  |

8 - Please use a five-point scale (5="A great deal", $1=$ "Nothing") to indicate how much you learned from this course in general.


## 9 - Please rate the following statements on a scale of 5 (strongly agree) to 1 (strongly disagree).

This course helped me gain factual knowledge.


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12 - Please provide additional comments about the course if not covered by the previous questions.

| Response Rate | $10 / 60$ (16.67\%) |
| :--- | :--- |

- Prof. Lin Jiu is really nice!!!
- nothing
- The content may add more things linked to the Math20x, It is too simple to help the future class.
- NO, Thanks
- no
- Nothing yet, I have to say I really like doing math homework on Webork, because I like practicing after classes.
- I was kind of pushed out of my comfort zone in this course. I knew little about media art, photoshop, and premiere pro before. I learned a lot in this course, and I like all the materials in class.


 even though the professor mentioned that topics such as optimization were important and relevant to what we were studying, he simply couldn't teach us that topic in detail just cause we didn't have

 structure
- nothing
- It was too hard for me. I did not expect it to be that hard because when I apply for MATH 101, the decider said that it would be just okay. But, I think I should have enrolled in MATH101.



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| Course: | 7W2-MATH-105-004: Calculus |
| :--- | :--- |
| Instructor: | Lin Jiu |
| Response Rate: | $47 / 60(78.33 \%)$ |


| Response Rate | 12/60 (20\%) |
| :---: | :---: |
| - I think Prof. Lin Jiu can just fo <br> - please be patient with studen <br> - Please use more complex ex <br> - Excellent <br> - Professor is really patient and <br> - He is a very good professor. <br> - The insturctions is always clear <br> - Professor Jiu is the most helpf has excellent explanation of $m$ <br> - Prof. Lin Jiu was always very zone accordingly. <br> - Nice professor. My complain person learning, especially be related to my arrival to China, <br> - BE A GOOD PERSON WITH PLEASE BE A GOOD PERSO <br> - He is a good lecturer. | aching pace and material if possible. <br> 1-5. <br> ed the class very much. <br> major in applied math, I hope I can take his course again in the future. <br> or the notes professor has provided, it helps a lot for reviewing. <br> ive instructor I have met in DKU since I came this fall. He has extremely great teaching styles, and he is eager to take student' questions. Professor Jiu cepts. To be honest, I truly enjoyed taking this course with professor Jiu. <br> exible to students' requests. As a remote student, Prof. Lin Jiu responded to emails promptly and made sure to solve any issue regarding audio or time <br> ss exclusively corresponds to the class and its structure, not to the professor. He was accommodating when I transitioned from hybrid learning to in ed from quarantine. The only thing I wish is that he would be more understanding after I got released from quarantine, as I was still running errands as already done with quarantine. <br> AD THINGS AND TALKING TO STUDENTS LIKE YOU PREVIOUSLY DO. Very bad attitude towards students and the lectures are not understandable. BULLY ALL STUDENTS JUST BECAUSE THEY DON'T HAVE ANY POWER COMPARED TO YOU. |

15 - About Online LearningPlease provide comments and/or suggestions on any aspects of your online learning experience this term.



[^0]:    ${ }^{1}$ https://www.wolfram.com/mathematica/
    ${ }^{2}$ https://www.sagemath.org/

[^1]:    ${ }^{3}$ https://www.maxhub.com/
    ${ }^{4}$ https://openwebwork.org/
    ${ }^{5}$ https://www.gradescope.com/

