Teaching Dossier

Mitul Islam

Course: Math 115 (Intro to Differential Calculus)

University of Michigan

Course Website: https://dept.math.lsa.umich.edu/courses/115/index.html

Syllabus: Based on the Calculus textbook by Hughes-Hallet and Gleason, Wiley, please see https://dept.math.lsa.umich.edu/courses/115/1overview.html

Teaching Materials provided:
1 sample problem set
1 student feedback (Fall 2019)

Sample problem set used in class

Worksheet 1
Functions and Linear Functions

1. Which of the following could be the graph of a function ?

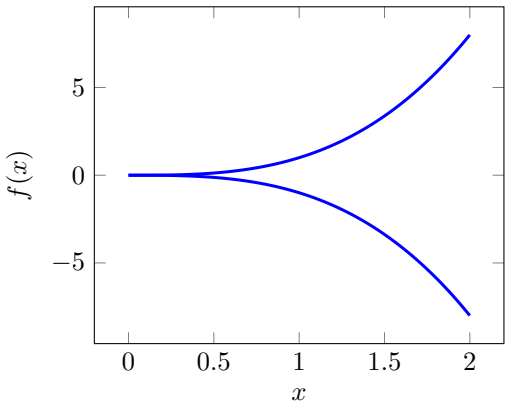


Figure (a) : $y = f(x)$

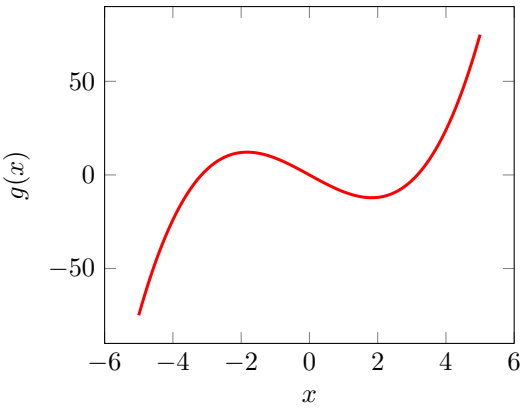


Figure (b) : $y = g(x)$

2. $D = F(t)$ gives the average annual water level, D, **in meters**, in MacKinac Island, Michigan, as a function of t, **the number of years after 2017**. Write a mathematical expression for the following:

   (a) The average annual water level in 2019 was 7,000 centimeters.

   (b) The average annual water level increased by 1 millimeter from 2018 to 2019.

   (c) The average annual water level in 2018 is half that of the average annual water level in 2016.

   (d) The average annual water level in 2000.

   (Test your understanding) Suppose F is the same function as above. Write a complete sentence providing physical interpretation of the following expression (with units) : $F(0)$.

3. Find the domain and range of $f(x) = \dfrac{1}{x^2 + 2}$.

4. Can the following situation be modeled by a linear function?

   A scientist is measuring the toxicity, C, in cubic tons, in a lake after a chemical spill, as a function of time, t , in hours since the spill took place. Suppose that toxicity was 100 cubic tons an hour after the spill and had decreased to 52 cubic tons 13 hours after the spill. Twenty five hours after the spill, the toxicity had fallen off to 4 cubic tons.

   (a) If possible, find $C = g(t)$.

(b) What is the average rate of change of $C = g(t)$? Do you know another name for this quantity?

(c) Find the horizontal and vertical intercepts of $C = g(t)$ with appropriate units. What are their physical interpretations?

5. Pg 13 Q 70
6. Are the following functions increasing or decreasing?
   (a) $f(x) = x^3$
   (b) $g(x) = -x^3$
   (c) $h(x) = x^2$
7. Give an example of a monotonic function.
8. (Proportionality) Write formulae representing the following statements :
   (a) Temperature T is directly proportional to the cube of the population size s.
   (b) Amount of snow in a year, U, is inversely proportional to the square of the population size s.
9. Pg 7 Q 12, 18.
10. Find the equations of the lines through (a, b) that are : (i) Parallel, (ii) Perpendicular, to the line $y = mx + c$. (Assume $m \neq 0$)
11. Zipcar rents cars at $40 a day plus 15 cents a mile while its competitor, Maven, rents cars at $50 a day plus 10 cents a mile.
    (a) For each company, find a formula that gives the cost of renting a car as a function of the number of miles driven.
    (b) Drawing the graphs of both the functions in the same set of axes, find out which company is cheaper.

Sample of student feedback - Fall 2019
Course: Math 115 at University of Michigan

University of Michigan
Fall 2019 Instructor Report With Comments
MATH 115-026: Calculus I
Mitul Islam

12 out of 18 students responded to this evaluation.

Responses to the University-wide questions about the course:

	SA	A	N	D	SD	N/A	Your Median	University-Wide Median	School/College Median
This course advanced my understanding of the subject matter. (Q1631)	3	8	1	0	0	0	4.1	4.5	4.2
My interest in the subject has increased because of this course. (Q1632)	1	4	4	2	1	0	3.3	4.2	3.6
I knew what was expected of me in this course.(Q1633)	7	4	1	0	0	0	4.6	4.4	4.3
Overall, this was an excellent course.(Q1)	2	7	1	0	2	0	3.9	4.2	3.9
I had a strong desire to take this course.(Q4)	1	1	7	1	2	0	2.9	4.0	3.4
As compared with other courses of equal credit, the workload for this course was...(SA=Much Lighter to SD=Much Heavier) (Q891)	0	1	5	3	3	0	2.5	3.0	2.9

Responses to University-wide questions about the instructor:

	SA	A	N	D	SD	N/A	Your Median	University-Wide Median	School/College Median
Overall, Mitul Islam was an excellent teacher.(Q2)	7	4	1	0	0	0	4.6	4.6	4.4
Mitul Islam seemed well prepared for class meetings.(Q230)	10	1	0	1	0	0	4.9	4.8	4.7
Mitul Islam explained material clearly.(Q199)	5	3	3	1	0	0	4.2	4.6	4.5
Mitul Islam treated students with respect.(Q217)	10	2	0	0	0	0	4.9	4.8	4.8

Responses to additional questions about the course:

	SA	A	N	D	SD	N/A	Your Median	University-Wide Median
I gained a good understanding of concepts/principles in this field. (Q121)	2	6	3	0	1	0	3.8	4.3
Working with other students helped me learn more effectively. (Q256)	5	4	2	0	1	0	4.3	4.1
Grades were assigned fairly and impartially. (Q365)	7	4	0	1	0	0	4.6	4.4

Responses to additional questions about the instructor:

	SA	A	N	D	SD	N/A	Your Median	University-Wide Median
Mitul Islam handled questions well. (Q200)	7	3	2	0	0	0	4.6	4.6
Mitul Islam was willing to meet and help students outside class. (Q219)	7	4	1	0	0	0	4.6	4.7
Mitul Islam used class time well. (Q229)	7	4	1	0	0	0	4.6	4.6
Mitul Islam was concerned that we learn. (Q509)	10	1	1	0	0	0	4.9	4.6
Mitul Islam was confident and in control of the class. (Q510)	6	4	0	2	0	0	4.5	4.4

The medians are calculated from Fall 2019 data. University-wide medians are based on all UM classes in which an item was used. The school/college medians in this report are based on classes that are lower division with enrollment of 16 to 74 in Division of Natural Sciences in the College of LS&A.

Written Comments

Comment on the quality of instruction in this course. (Q900)

Comments
Mitul was a great GSI, and especially after speaking with other students who had different GSIs he seems to be one of the best ones. He was always very patient with us, and if we didn't understand the way he initially explained something, he took the time to work with the class and explain concepts in different ways until we all understood. The classroom environment he created was comfortable, which is important in a class that involves so much group work. Mitul encouraged us to learn without being scary, and had a great balance of helping us work through problems and encouraging us to work through them ourselves. He treated the class with respect which made us want to respect him, and overall was a great instructor.
Mitul did a great job but if I hadn't taken the class in high school I would most likely be falling behind, but I think that's just the nature of the course
Mitul was a wonderful teacher. I think that with a little more training on how to clearly communicate the concepts (that I can tell he knows very well himself), he would be an excellent teacher.
Dr. Islam was an amazing GSI and one of the best math teachers I have ever had. He handled questions well and really helped me perform well in the course.
Great
It was very well–paced and thorough, with a fun and effective teacher.
Instructor took little time to ensure individual students understood the topics and instead ensured the group as a whole seemed to understand the topic and then moved on.
Mitul did a great job of explaining the topics and knew the important areas of each topic that would be helpful to focus more time outside of class on. He used the time very well by lecturing and then allowing us to work on practice problems while he assisted us and checked our processes.
Instruction seemed to be geared with the assumption that students had seen many of these questions before, and had taken this course in high school. As someone who did not, I have felt far behind for the entire course.
We need professors!!!! This instruction just is not good enough for the students that really need a teacher and not just a guideline. The teaching methods that Michigan thinks are useful are not, it's just students going above and beyond on their own to earn good grades.
Mitul Islam is an excellent instructor

Course: Matrix (Lie) Groups

Universität Heidelberg, Spring-Summer 2023

Target Audience: Undergraduate students in mathematics and physics

Course Website: https://mitul-islam.github.io/class/matrix_groups_2023/matrix_groups_2023.html

Teaching Materials provided:
1 sample syllabus
1 student feedback
1 informal in-class student survey

PROSEMINAR/SEMINAR: MATRIX (LIE) GROUPS

Lecturer: Dr. Mitul Islam
Email: *mislam@mathi.uni-heidelberg.de*
Meeting Time: Thursdays 16.00 - 18.00
Meeting Place: Seminarraum 8, Mathematikon
Language: The talks are supposed to be in English.
Course Website: Matrix Groups course webpage

Abstract

This is a seminar targeted at mid-level as well as advanced undergraduate students. The goal of the course is to introduce some basic ideas in Lie theory through matrix groups. There will be a strong emphasis on looking at plenty of examples of matrix groups.

The first part of the course will be a fairly general introduction to matrix groups and their Lie algebras - both as algebraic objects and as tangent spaces at identity to the respective groups. In the second part, we will focus on compact matrix groups and discuss their structure theory. At the end, we will cover the classification theorem of compact semi-simple Lie groups and look at some concrete examples.

Recommended Pre-requisite

Linear Algebra, Analysis (Basic topology in $\mathbb{R}^n$ and the notion of derivatives), Basic abstract algebra (group theory).

Roughly speaking, if you feel comfortable with the first three chapters of Reference (1) below, this class is well-suited for you.

Key References

(1) **(A very simple introductory textbook)** Matrix Groups for undergraduates, Kristopher Tapp (AMS). (**only for talks 1-6**)
(2) **(Main Reference Text)** Matrix Groups: an Introduction to Lie Group Theory, Andrew Baker, Springer, 2002.

Rules

Grading. You must give a talk to receive a grade. The quality of your talk will determine your grade. Please register on Müsli for the class, if you haven't.

If for some reason, you are unable to give the talk that you had signed up for, you should let me know at least two weeks ahead of your scheduled talk. Otherwise, you risk attracting a grade penalty. This of course does not apply to an emergency situation (e.g. medical or family). In case of such emergencies, a decision will be made on a case-by-case basis.

Participation. While attendance and participation isn't mandatory, you will receive bonus grade points for active participation in the seminar.

Date: February 2023.

Seminar Presentation

Preparing for the talk. Ideally one should start preparing for their talk around 3-4 weeks ahead of time. Suppose your talk is on the day T.

- Between $T-20$ to $T-8$, you should have a meeting with me to discuss the material of your talk: give me a short overview of your talk, ask me questions about the material, etc.
- Between $T-7$ and $T-3$, you should either send me your talk notes or have a second meeting to give me a 10-minute version of your talk.

Day of the talk. Presentations using a board is preferred. But if you have other ideas like using a tablet or slides, please discuss this with me ahead of time.

For your talk, you are expected to prepare two things besides your presentation:

- a 1-page handout (could be typed, written on a tablet, legibly hand-written, etc.) that contains a short list of things you are covering. You can send me this before the talk and I can make copies for everyone.
- a problem hand-out with 1 or 2 problems based on your presentation.

The talk. You should plan to speak for 35-40 minutes. Then you ask the class to work on one problem from your problem hand-out and give them a few minutes to brainstorm. Then there is a 5-minute session when there is some discussion and then you explain the solution.

Class time. Per the usual convention, we will start 15 minutes after the hour (i.e. 16.15 if the official start time is 16.00) and we will try to end 15 minutes before the two-hour mark (i.e. 17.45 if the official end time is 18.00). But if the last talk is going over the expected time, please be patient and do not interrupt the speaker.

There will often be two talks on the same day. On those days, there will be a 5-minute break between the two talks.

Questions. You are strongly encouraged to ask questions - both at the end during discussions as well as during the talk. You must not deter yourself from asking questions because you are worried that you will interrupt the talk.

Schedule

Date	Talk
April 20	Talks 1 and 2
April 27	Talk 3
May 4	Talk 6
May 11	Talks 4 and 7
May 18	–
May 25	Talks 9 and 5
June 1	–
June 8	–
June 15	Talk 8
June 22	–
June 29	Talks 10 and 11

LIST OF TALKS

1. Introduction to Matrix Groups and Examples

Emilian Arnold

We will introduce the following families of matrix groups which will serve as the main examples throughout the course.

Key examples: $\mathrm{GL}_n(\mathbb{K})$, $\mathrm{SL}_n(\mathbb{K})$ for $\mathbb{K} = \mathbb{R}, \mathbb{C}$; orthogonal groups $O(n), U(n), SO(n), SU(n)$.

Explain how to think of complex matrix groups as real matrix groups.

Have a discussion on the group of isometries of the Euclidean space $\mathbb{R}^n$. Explain how orthogonal groups arise as groups that preserve certain bilinear forms.

It is also important to show some low-dimensional examples. Write down $SO(2)$ and $SO(3)$ and explain that it encodes positions on a cricle and a 2-dimensional sphere. Then write down $SU(2)$. Prove (or at least give some ideas about) the following: $SU(2)$ is a double cover of $SO(3)$.

Very important: give examples to show that not all groups are matrix groups (Section 7.7 of Baker's book (Ref 2) gives such an example)!

If time permits, explain the group of quarternions and the matrix groups over them. Explain how they can be realized as matrix groups over $\mathbb{C}$ and hence $\mathbb{R}$.

2. Topology of Matrix Groups

Friedrich Homann

Discuss the topology on matrix groups - open sets, closed sets, limit points, homeomorphisms, connectedness, compactness.

The ideal way to structure this class is to first say that we will think of matrix groups as subsets of $\mathbb{R}^m$ by looking at the coordinate map. Then introduce all these concepts in $\mathbb{R}^m$. Then explain how to give a matrix group the subspace topology.

It is important that you give examples of open matrix groups, closed matrix groups, compact matrix groups, connected and disconnected matrix groups.

3. Lie Algebra

Robin Campbell and Dominik Svorad

In this class, we will define the Lie algebra of a matrix group at the tangent space of the group at identity. You can structure your talk loosely following Chapter 5 of Tapp. The talks should encompass the following:

(a) Introduce Lie algebras as tangent space at identity. To do this, first introduce the necessary background - define tangent vectors and tangent space for subsets of the Euclidean spaces and then use this to define Lie algebras.
(b) You do NOT need to go into Lie brackets. That will be done in the next class. You can just briefly mention that Lie algebras also has a different formulation in terms of Lie brackets which will be done in the next lecture. In this talk, you will focus mostly on the tangent space viewpoint and do examples.
(c) Talk about the dimension of Lie groups using Lie algebras (Definition 3.17 of Baker)
(d) Compute examples (Section 3.3 of Baker or Chapter 5 of Tapp) of Lie algebras. Do some dimension computations as well.
(e) Explain how the Lie algebras can be thought of as the space of left-invariant vector fields (Chapter 5 Section 3 in Tapp).
(f) Talk a little bit about the complexification of Lie algebras, see Section 3.6 of Baker's book. In particular, discuss the example of Page 94-95. It is an example where two non-isomorphic real Lie algebras have the same complexification.

Note that examples are crucial. So please compute the Lie algebras in all of our key examples.

4. Matrix Exponentiation

Amelia Faber

This talk is going to be on the exponential map between Lie algebras and matrix groups. The talk could be structured loosely based on Chapter 6 of Tapp, supplemented by details from Chapter 2 of Baker. It should encompass the following:

(a) Define the exponential map exp for matrices. For this, you will first need to explain what it means for a series in a matrix group to converge. (Chapter 6 Section 2 of Tapp)

(b) Discuss some algebraic properties of this map, refer to Chapter 6 Section 4 of Tapp.
One important thing to mention here is that:
- $\exp(A+B) = \exp(A)\exp(B)$ only under some conditions, unlike the real-valued exponential map. For reference, see Proposition 2.2 of Baker's book (ref 2)
- Mention the Baker-Capmbell-Hausdorff formula (see e.g. Wikipedia article on this) that in general gives a formula for $\exp(A)\exp(B)$.

(c) Discuss that the map $\exp : M_n(\mathbb{K}) \to \mathrm{GL}_n(\mathbb{K})$, where $\mathbb{K} = \mathbb{R}$ or $\mathbb{C}$, is a local diffeomorphism near 0. A reference for this could be Proposition 2.4 of Baker.

(d) Explain that because of the above, exp is a map that takes you from the Lie algebra to the matrix groups. (Chapter 6 Section 3 of Tapp).

(e) Further, the map exp has a local inverse: discuss the log function. Refer to Proposition 2.3 of Baker.

(f) Then discuss the connection of exp with matrix-valued ODEs. Interpret $x(t) := \exp(tA)$ as a solution of the ODE $x'(t) = A \cdot x(t)$ (like in the case of real variables). References are Sections 2.3-2.4 of Baker and Proposition 6.9-6.10 of Tapp.

(g) Finally discuss an application of the exp map to matrix-valued differential equations. Show an explicit computational example, e.g. pick one of the Examples 2.20-2.23 from Baker. Along the way, you might need to use the Jordan canonical form of matrices and why it's easy to compute the exponentials of Jordan matrices.

5. Matrix groups as manifolds

Simon Weiß

This talk is supposed to introduce the basic definitions of smooth manifolds with a focus on explaining the statement: "matrix groups are smooth manifolds where the group operations are smooth maps". The talk could be structured loosely based on Chapter 7 of Baker's book.

(a) Define the notion of a smooth manifold (using charts, atlases, and transition maps). Then explain the notion of tangent vectors (as derivatives of curves) and tangent space at a point. Give some good and concrete examples here - say sphere $\mathbb{S}^2$, torus, and cylinder.

(b) Then explain the notion of derivative for a map between two manifolds (before doing this, recall the notion of derivative for functions between $\mathbb{R}^m$ and $\mathbb{R}^n$). Give an example of the derivative of a function, say $f : \mathbb{S}^2 \to \mathbb{R}$ given by $f(x, y, z) = z$.
Then explain what a smooth map is.

(c) Explain that matrix groups have the structure of smooth manifolds. Remind the audience of the earlier definition of Lie algebras that they are tangent spaces at identity.

(d) Use this abstract notion of manifolds, to define Lie groups. Conclude the discussion by explaining that:
  (a) all matrix groups are Lie groups (so we have already seen many examples of Lie groups!)
  (b) but not conversely (remind the audience of the example from Talk 1 of a group that isn't a matrix group. It should be clear now that the example was a Lie group. The example came from Section 7.7 of Baker's book.)

6. Lie Bracket

Jonas Biba and David Barth

The goal of the talk is to define Lie algebras algebraically - as a vector subspace with a bilinear map called the Lie bracket. Then one should reconcile this with the definition we saw earlier as tangent space at identity. The talk could be loosely based on Chapter 8 of Tapp's book. The talk must encompass the following:

(a) Introduce the Lie bracket $[A, B]$ as the commutator and show that it satisfies bilinearity, alternativity, and Jacobi identity (see e.g. Wikipedia article on Lie algebras for help with these last three terms)

(b) Define Lie algebras as vector subspaces that carry a Lie bracket. In particular, explain why all the Lie algebras we had seen earlier (defined in the sense of tangent spaces) are Lie algebras in this sense.

(c) Introduce Lie algebra homomorphisms. Discuss a few things, like how the derivative of Lie group homomorphisms (define them now) produce Lie algebra homomorphisms. Discuss what happens in the case of isomorphisms. An example to discuss here is $SO(3)$ and $SU(2)$. Their real Lie algebras are isomorphic although the groups are not (remind the audience about this example that we saw earlier; for reference see Section 3.5 of Baker or Pg 117 of Tapp).

Official student feedback for the class Matrix (Lie) Groups

(translated to English from German)

The course was taught in English

Heidelberg University

heiQUALITY office
Service point surveys

Heidelberg University

Mitul Islam

Evaluation report of the course survey to the lecturers

Dear Mitul Islam,

Here you will receive the evaluation of the survey of your course Matrix Groups in summer semester 2023.

This evaluation report lists the frequencies, mean values and standard deviations of the individual questions.

For data protection reasons, it is no longer possible to reopen the survey.

If you have any questions about the course survey or this evaluation report, please contact the surveys service point in the heiQUALITY office:

lvb@heiquality.uni-heidelberg.de

Best regards

Julia Schreiner and Stefanie Rudloff

Service center for surveys and reporting
heiQUALITY office
University of Heidelberg

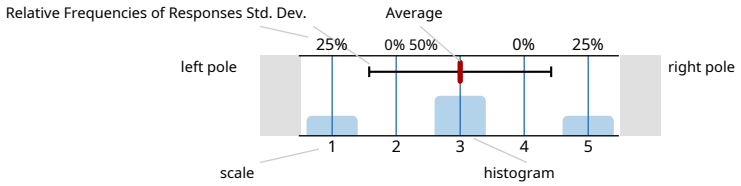
Mitul Islam

Matrix Groups (FMI_SoSe23_104)

Questionnaires collected = 9

Legend

question text



n=number
mw=mean
s=std dev.
E.=Abstention

1.General questions

1.1) Within which **course** do you attend this event?

n=9

BSc mathematics 50%	44.4%
BSc math 100%	33.3%
BSc physics	22.2%

1.3) If you are doing "B.Sc. Mathematics 50%" or "B.Sc. Computer Science 50%" are enrolled, please specify:

n=4

with teaching option	50%
without a teaching option	25%
not specified	25%

1.4) Please give your **semester in this course** at:

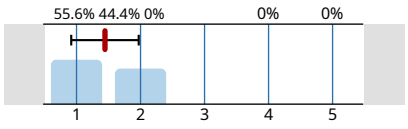
n=9

1 - 2	22.2%
3 - 4	55.6%
5 - 6	11.1%
7 - 8	11.1%
9+	0%
not specified	0%

2.Evaluation of the course

2.1) The learning objectives were clearly defined at the beginning.

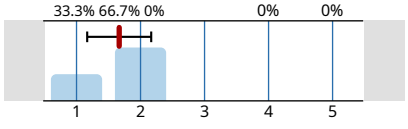
totally agree — I disagree



n=9
mw=1.4
s=0.5

2.2) The course is clearly structured.

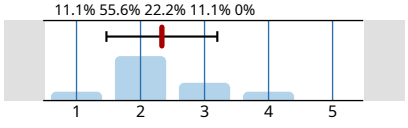
totally agree — I disagree



n=9
mw=1.7
s=0.5

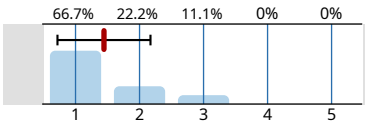
2.3) The subject matter is presented in an understandable way.

totally agree — I disagree



n=9
mw=2.3
s=0.9

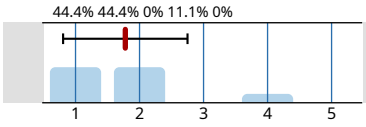
2.4) Questions and concerns of the students are addressed.

totally agree 

I disagree

n=9
mw=1.4
s=0.7

2.5) My learning gain is high.

totally agree 

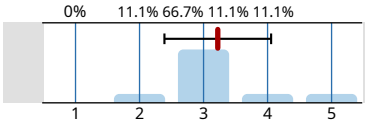
I disagree

n=9
mw=1.8
s=1

3. workload

3.1) Compared to the credit points awarded, my actual workload for this course is:

(1 CP = 30 hours of work)

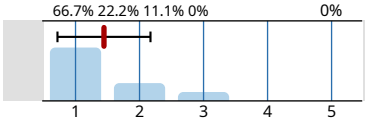
very high 

very low

n=9
mw=3.2
s=0.8

4. My lecture

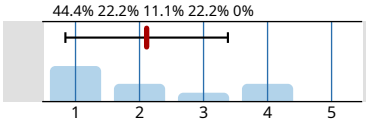
4.1) I was well looked after in the preparation of my presentation topic.

totally agree 

I disagree

n=9
mw=1.4
s=0.7

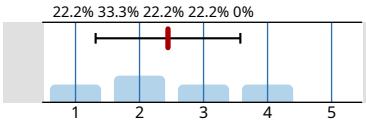
4.2) The material can be presented well in the time available to me.

totally agree 

I disagree

n=9
mw=2.1
s=1.3

4.3) I got enough feedback.

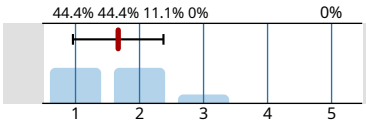
totally agree 

I disagree

n=9
mw=2.4
s=1.1

5. seminar

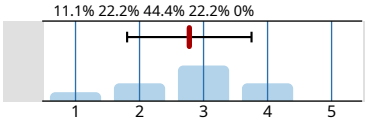
5.1) The lecturer sets the right priorities when choosing a topic.

totally agree 

I disagree

n=9
mw=1.7
s=0.7

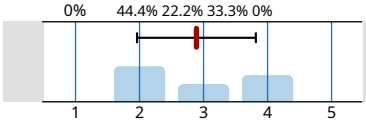
5.2) The topics of the lectures are well coordinated in terms of content.

totally agree 

I disagree

n=9
mw=2.8
s=1

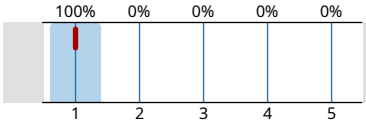
5.3) The various lecture topics are comparable in terms of the requirements (the elaboration).

totally agree 

I disagree

n=9
mw=2.9
s=0.9

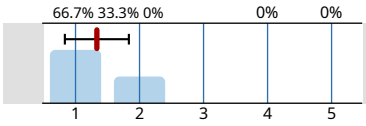
5.4) The teacher was attentive during the lectures.

totally agree 

I disagree

n=9
mw=1
s=0

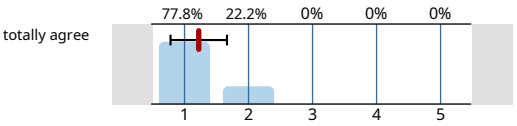
5.5) I learned something in the seminar that went beyond my own presentation topic.

totally agree 

I disagree

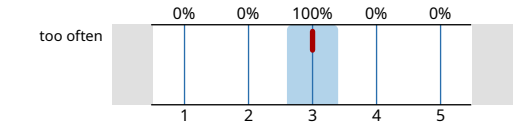
n=9
mw=1.3
s=0.5

5.6) I would recommend seminars with these teachers.



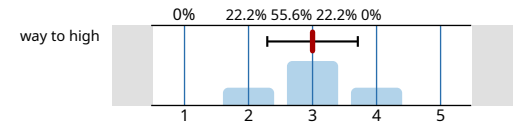
n=9
mw=1.2
s=0.4

5.7) How often did the teacher intervene in the lectures with questions and corrections?



n=9
mw=3
s=0

5.8) I find the level of requirement of the seminar to be...



n=9
mw=3
s=0.7

6. Closing Questions

6.1) What did you particularly like about this seminar?

- Interesting topic
- Mitul was very willing and happy to help if we had any questions or problems. The preparation and organization was clearly structured and Mitul was able to give very good, helpful professional tips
- Organization, accessibility of the teacher, help with all questions
- Very competent supervisor who is also very nice

6.2) What suggestions / suggestions for improvement do you have for this seminar?

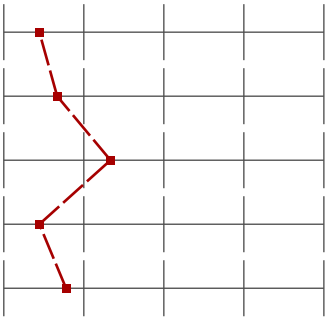
- The order of the lectures was sometimes a little unfavorable because some things were needed in lectures that came later. In addition, it would be good to include a follow-up discussion quite quickly after the presentation, since in my experience this feedback increases the learning curve in terms of presenting enormously. However, when we asked, we received feedback.
- I'd set the prerequisites higher. One should have completed 'Analysis 2' before taking the seminar.
- Maybe revise the lecture order
- If necessary, structure the time a little better

profile line

Section: Faculty of Mathematics and Informatics
Name of the teacher: Mitul Islam
Title of the course: (name of the survey) Matrix Groups

Values used in the profile line: mean

2.Evaluation of the course

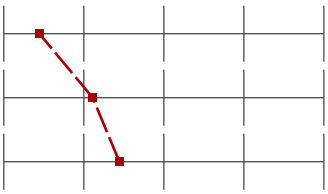


2.1)The learning objectives were clearly defined at the beginning.	totally agree	even agree not to	n=9	mw=1.4	md=1.0	s=0.5
2.2)The course is clearly structured.	totally agree	even agree not to	n=9	mw=1.7	md=2.0	s=0.5
2.3)The subject matter is presented in an understandable way.	totally agree	even agree not to	n=9	mw=2.3	md=2.0	s=0.9
2.4)Questions and concerns of the students are addressed.	totally agree	even agree not to	n=9	mw=1.4	md=1.0	s=0.7
2.5)My learning gain is high.	totally agree	even agree not to	n=9	mw=1.8	md=2.0	s=1.0

3.workload

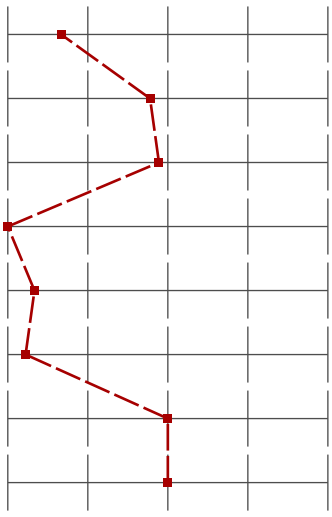
3.1)Compared to the credit points awarded, my actual workload for this course is:	very high	very low	n=9	mw=3.2	md=3.0	s=0.8

4.My lecture



4.1)I was well looked after in the preparation of my presentation topic.	totally agree	even agree not to	n=9	mw=1.4	md=1.0	s=0.7
4.2)The material can be presented well in the time available to me.	totally agree	even agree not to	n=9	mw=2.1	md=2.0	s=1.3
4.3)I got enough feedback.	totally agree	even agree not to	n=9	mw=2.4	md=2.0	s=1.1

5.seminar



5.1)The lecturer sets the right priorities when choosing a topic.	totally agree	even agree not to	n=9	mw=1.7	md=2.0	s=0.7
5.2)The topics of the lectures are well coordinated in terms of content.	totally agree	even agree not to	n=9	mw=2.8	md=3.0	s=1.0
5.3)The various lecture topics are in the requirements (of the draft) comparable.	totally agree	even agree not to	n=9	mw=2.9	md=3.0	s=0.9
5.4)The teacher was attentive during the lectures.	totally agree	even agree not to	n=9	mw=1.0	md=1.0	s=0.0
5.5)I learned something in the seminar that went beyond my own presentation topic.	totally agree	even agree not to	n=9	mw=1.3	md=1.0	s=0.5
5.6)I would recommend seminars with these teachers.	totally agree	even agree not to	n=9	mw=1.2	md=1.0	s=0.4
5.7)How often did the teacher intervene in the lectures with questions and corrections?	too often	rarely	n=9	mw=3.0	md=3.0	s=0.0
5.8)I find the level of requirement of the seminar to be...	way to high	much too low	n=9	mw=3.0	md=3.0	s=0.7

Sample of unofficial student feedback
Course: Matrix (Lie) Groups

Done by myself, by distributing notecards in-class.

I asked the students to write -
1 thing they like, 1 thing they dislike, 1 math question, and 1 comment.

I usually do such informal surveys periodically to get a sense of how the class is going.

1.) Handouts, atmosphere, meeting with you before the presentation
2.) time structure
3.) How does the material know help to understand the structure of the group?
4.) I enjoyed this class, mostly the topic and the great amount of examples

BRUNNEN Nr. 22 701..

Vay

+: I liked the ~~sup~~ we were able to contact you for questions and that you really took time answering them and giving expl.

-: I would've wished for feedback right after the talk since in a seminar I did before I think I really

BRUNNEN Nr. 22 701..

like: I learned a lot, discussion before class very helpful

dislike: It would have been easier, if talks could be a little longer (e.g. one talk not two talks per class) in order to better follow what is going on, seeing more examples

math question: how to explicitely calculate root systems (example)

comment: for some talks one needed theorems introduced in later sessions, maybe one could switch the order of some talks

positive:
- good exercise for presenting/ doing talks on math
- interesting new field
- difficulty of talks mixed, accessible to many

negative:
- I was able to do my talk, but I think I would've taken away much more if I ~~took~~ were more advanced (maybe Analysis 2 as pre-req.)
- the order of the talks wasn't ~~pated~~
- maybe 90 min talks would be better

BRUNNEN Nr. 22 701..

Question

+ The Book was pretty good (Baker), The topic war interesting and pretty fun

- Continuity at some points at which ~~we~~ we were using Things that weren't introduced

Comment
It was nice, that you gave some Intuitions for certain Topics/Concepts

What I like is that Mitul replied very fast to any questions regarding the talk and you ~~could~~ got the feeling that you could meet him anywhere anytime because he always gave his best to find time for you and answer all your questions.
I don't really have anything to dislike about this course.

like: Lecturer showed great interest for the topic -> fun to listen to

dislike:

Math question:

Comment: Happy you offered this Seminar

👍: nice overview about Lie groups, great supervision, good teaching ability (esp. talk pace/difficulty)

👎: a few timing issues in every talk, maybe no pause in between, more time for the small exercises ⊛

Math?: What happens to Lie algebras ~~who~~ whose underlying field has a characteristic which is non zero

comment: thank you for having us. I really enjoyed the atmosphere of the course. Also for me it was helpful

⊛: maybe less basic talks (like topology, matrix groups etc.) and more in depth-theory.