

NS102 Fall 202301 Syllabus

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Course Description and Objectives:

Science of Nature courses aim to initiate a curiosity and desire for learning “scientific thinking” in students and at the same time to introduce some of the basic concepts of physical, chemical, and biological sciences in connection with questions concerning the nature and our daily life.

The **NS 102** course consists of two modules: “**(1) Can we stop/reverse climate change?**” and “**(2) Can we ever comprehend the workings of the brain?**” Scientific methodology and fundamental concepts in the physical, chemical, and biological sciences are introduced through an integrated approach in the framework of these questions.

Upon completing NS 102, students will be able to:

1. Demonstrate skills for critical thinking, reasoning and problem solving through integration of different concepts and information.
2. Distinguish among scientific laws, hypothesis and theory and use them to differentiate facts from fiction.
3. Apply mathematical concepts to solve quantitative problems.
4. Demonstrate fundamental knowledge of the terminology, major concepts and theories of one or more fields in physical, chemical, and biological sciences.
5. Describe the role of science and technology, and develop skills for communicating scientific concepts and facts to society in general.
6. Demonstrate professionalism and ethics when using scientific approach to make informed decisions in daily life situations.

Active Lecture Times and Room:

AL Section	Time	Room	TopHat join codes
A	Wednesday 10:40-12:30	FASS 2119/2128	860230
B		SBS L014	116163
C	Wednesday 14:40-16:30	FASS 2119/2128	872411
D		SBS L014	671081

FASS: Faculty of Arts and Social Sciences
SBS: Sabanci Business School

Instructors & Office Hours:

	AL Section	1. CLIMATE MODULE Can we stop/reverse climate change?	2. BRAIN MODULE Can we ever comprehend the workings of the brain?
Instructors	A & C	Gözde İnce gozde.ince@sabanciuniv.edu Office: FENS 2009 Office Hour: TBA	Zehra Sayers zehra@sabanciuniv.edu Office: FENS 2087 Office Hour: TBA
	B & D	Aslıhan Ünsal aslihan.unsal@sabanciuniv.edu Office: UC 1089 Office Hour: TBA	
Course Coordinator	All	Çiğdem Altıntaş cigdem.altintas@sabanciuniv.edu Office: UC 1089 Office Hour: TBA	

Recitation Times and Rooms:

Recitation Section	Time	Room	Teaching Assistants	Learning Assistants
A1	Friday 8:40-10:30	FASS 2119/2128	MTA: Deniz Kesici TAs: Faezeh Rahbarshendi, Saifa Amin	Zaynab Mahnoor Rumman
B1	Friday 10:40-12:30	FASS 2119/2128	MTA: Ndiogou Niang TAs: Rabia Mercimek, Ahmed Abdullah Abbasi, Elham Ghorani, Bahareh Bakhtiari	Zaynab Mahnoor Rumman Öykü Örsmen
C1	Friday 12:40-14:30	FASS 2119/2128	MTA: Ahmed Abdullah Abbasi TAs: Mehri Ahmadiangollajeh, Solomon Birhanu Samuel, Elif Nur Yıldız, Elham Ghorani, Rokhsareh Bakhtiari	
D1	Friday 14:40-16:30	FASS 2119/2128	MTA: Ndiogou Niang TAs: Solomon Birhanu Samuel, Saifa Amin	Öykü Örsmen

* **MTAs** (Master TAs) are the lead TAs in recitations. **Click their names to email** the MTAs, TAs, and LAs.

Course Materials:

There is **no course book** for this course; however, there are collections of **Weekly Resources** provided on SUCourse under the module page (Climate Module or Brain Module) sorted under the weekly tabs (CLT1, BRN4, etc).

Recommended Books

- "Conceptual Integrated Science", P. G. Hewitt (an e-copy available at the Information Center, [click this link](#) - you can check it out for 24 hours at a time)
- "Science of Nature I", M. A. Alpar (PDF version available on SUCourse. Turkish version, "Doğayı Öğrenmek - Fizik" will also be available at the Information Center, on student reserve; several copies available for purchase at Homer).

Top Hat (online response system)

- In Active Lectures, we will be using an online response system called Top Hat accessible from tophat.com on your web browser or through a free Top Hat app (tophat.com/mobile-apps) if using tablet. Most of you already have an account from the previous semester. If you have not used the system before, please review [this "Getting Started" guide](#) before the first lecture. You must log in Top Hat with your SU email account name or it will not be counted.

Academic Integrity:

Academic Integrity Policy -- YOU MUST READ AND FOLLOW as a proud member of Sabanci University!

Each of you will be evaluated only for your own work. You are encouraged to work and study together with your friends; however, what you put down on your worksheets, quiz, assignments, and exam papers should be your own work in your own words. Note also that allowing your friends to copy your work is not helping them in any way and considered a violation of academic integrity principle.

Violations of academic integrity principle will result in zero grades for that assignment or exam, for all parties involved. In addition, the involved students will receive a warning, and no matter how minor, cheating will result in immediate disciplinary action that may result in failing the course.

We do not tolerate any breach of academic integrity. We have mutual trust and respect for each other as individuals while sharing a collaborative learning experience. This is very valuable for all of us, and having to lose this trust and respect would be very regrettable.

For the University's Academic Integrity Statement, see: <http://www.sabanciuniv.edu/en/academic-integrity-statement>

You can also reach 'Sabanci University Academic Integrity Handbook For Students' prepared by CIAD from this link: <https://ciad.sabanciuniv.edu/en/academic-integrity>

AI-based Technologies in Education: In the NS courses you are only allowed to use AI tools when explicitly stated in the assignment and indicated by your course instructors and facilitators. Please read the FDD's Position Statement on AI-Based Technologies at https://fdd.sabanciuniv.edu/peers/ai_statement to guide you in deciding if and when to use AI tools in academic contexts!

Weekly Course Structure:

Weekly organization of this course is shown in the table below. Each week, there is a set of specific learning objectives for you to achieve. You can find the learning objectives listed in the module page on SUCourse.

It is your responsibility to check SUCourse frequently and follow assignments and announcements.

	In-Class Sessions	Out-of-Class Responsibilities
Wednesday	Active Lecture (All sections)	By 10:00 AM , submit the virtual lecture assignment of this week.
Thursday		By 10:00 PM , submit the homework of the previous week. Evening: Check the weekly page (CLT1, CLT2, etc) on SUCourse for the virtual lecture set of next week. Start working on it early.
Friday	Recitation (All sections)	Evening: check the weekly page for the homework assignment.
Saturday-Tuesday		Work on the Weekly review problems and take the homework assessment of this week. Complete and submit the virtual lecture assignment of the upcoming week.

Course Requirements and Grading Policy:

There will be two exams (each one at the end of each module) and 14 weekly assignment sets during the semester.

The overall course grade will be evaluated based on the exams, assignments and lecture participation, each weighing as given in the table below. Please note that **55%** of your course grade is based on your exam performance because the exams assess your **individual achievement** level of the weekly learning objectives.

Virtual Lecture *	10%
Active Lecture	15%
Exams	55%
Recitation *	10%
Homework *	10%

* Lowest 3 grades will be dropped

Exams:

The exam scores are out of 100 each. The first exam will include the topics from the first module, and the second exam will include the topics from the second module only. All exams will be given in person, on campus. The exam rules will be announced prior to the exam. In the case of non-compliance with the rules and other declared exam procedures, your exam will be void.

Virtual Lecture (VL):

The aim of virtual lecture is for you to learn the basic concepts of the upcoming week before the in-class active lecture. Each virtual lecture set includes several interactive videos and quizzes in a sequential order. You can go over the VL set and take the quizzes as many times as you need. The virtual lecture sets are **10%** of the total grade. The **maximum** score will be recorded in your Gradebook **until the due date/time**. It is due at **10:00 AM on Wednesdays**, and no late submission will be accepted.

Active Lecture (AL):

During the AL hours, you will be actively working with your peers to apply and deepen your understanding of the concepts you learned from the virtual lecture set, with the guidance of the instructor. You must complete the virtual lecture set in order to get maximum benefit from the active lecture each week. Also, you MUST bring your laptops or tablets to each lecture.

You are not allowed to submit answers to TopHat questions from outside the classroom nor submit for another student. Such cases are considered as academic dishonesty and require disciplinary action. The active lecture grades will be calculated based on your participation during the lectures. Your cumulative percentage (total points you get/ maximum available points) is recorded as your lecture grade, which is **15%** of your total course grade.

The final Top Hat % will be converted to the lecture participation grade as follows:

- If $\geq 80\%$ = 15 points (regardless of your %, 15 points is the maximum you can receive)
- If $< 80\%$, the lecture grade = $15 \times (\text{your } \%) / (80\%)$ points

Recitation:

The aim of the recitation is to enhance conceptual understanding in the collaborative learning environment through problem solving, simulations and group discussions. You **MUST** bring your laptops or tablets to each recitation.

What do I do during the recitation?

You will be assigned to a small peer group and work collaboratively on problems provided in an online worksheet. Throughout the session, the recitation team (Master TAs, TAs, or LAs) visit your table and assist/guide you by asking questions to assess your conceptual understanding and progress. When you are done solving a problem, you will present your complete solution as a group to a TA or LA, who will ask you further questions and give you feedback. Make sure that each group member is individually prepared to present their solution. As a group, you can work at your own pace but you are encouraged to present your solutions for at least one problem each week.

How do I receive a grade for the recitation?

At the end of the recitation each week, you will take a short quiz related to that week's concepts. (**10%** of your course grade). You are not allowed to submit quiz outside of the classroom or submit for another student. Such cases are considered as academic dishonesty and require disciplinary actions.

Please note that coming on time to the recitation is very important since you will be working in groups. If you come to the class **more than 10 minute late**, you will NOT be allowed to take the quiz for that week.

Homework:

The aim of the homework is to reflect your understanding of the week's contents and concepts. Homework assessment must be submitted on SUCourse by **10:00 PM on Thursdays**, every week. **No late submission** will be accepted, but until the deadline you can retake the homework assessment **five times**, to improve your grade. Only the highest score will be recorded. Homework grades are **10%** of the total grade.

Calculating your overall grade:

The following formula will be applied to calculate the overall grade:

$$\text{Overall Grade} = ([\text{Midterm}] + [\text{Final}]) / 2 \times 0.55 + [\text{Recitation}] + [\text{Homework}] + [\text{Virtual Lecture}] + [\text{Active Lecture}]$$

Please note:

- The first decimal place of 5 and larger will be rounded up to the next integer (e.g., 67.5 → 68).
- If your exams' average (Midterm and Final) is below 30, you will fail the course regardless of your overall course grade.
- Failing to take one of the exams will result in failing the course.
- The letter grade ranges which will be used as a guideline, are provided in the table below.

Letter Grade	Overall Average	Conditions
A	100-90	Exam Average \geq 30
A-	89-85	
B+	84-80	
B	79-75	
B-	74-70	
C+	69-65	
C	64-60	
C-	59-55	
D+	54-50	
D	49-45	
F or NA	45-0	

NA Policy:

- If you miss one of the exams, you will automatically receive F for the course.
- If you miss one of the exam AND you have attempted less than 50% of all non-exam assessments (including active lecture attendance), you will receive NA.

Make-up Policy:

• For Lectures / Recitations:

- There will be **no make-up** for missed recitations or lectures; instead, the lowest 3 grades of recitations will be dropped. Thus, no medical report will be accepted.

• For Exams:

- If you cannot take an exam for a health-related reason, you need to inform the course coordinator by e-mailing to ns102@sabanciuniv.edu at the earliest opportunity while you are still ill. **Later claims will not be accepted.**
- You must obtain a medical report on the day you become ill, either from the campus Health Center (if you live on campus) or from the doctor that you went to see (if you live outside the campus). The report obtained outside the campus must be approved by a doctor at the Health Center on campus: please check the [medical report guideline](#) issued by the Health Center before you go to a doctor.
- If you cannot come to an exam due to other reasons (emergency, school-related activities, etc.), you must inform the course coordinator (via ns102@sabanciuniv.edu) at the time of your missed exam and must obtain a proper permission to attend a make-up exam. Later claims will not be accepted. Without the proper permission from the coordinator, you will not be allowed to take the make-up exam.
- Make-up for each exam will be given at the earliest convenience, in the format similar / equivalent to the original exam.

Course Schedules:

Week	Dates		Topics	Recitation*
	Begin	End		
CLIMATE MODULE				
1	2 OCT	6 OCT	CLT1: Why is there a “Climate Debate?” How should we interpret data?	CLT1
2	9 OCT	13 OCT	CLT2: The Earth has an “Energy Budget” that is kept in balance	CLT2
3	16 OCT	20 OCT	CLT3: Human activities that increase the concentration of greenhouse gases in the atmosphere contribute to climate change	CLT3
4	23 OCT	27 OCT	CLT4: The oceans play a big role in climate change	CLT4
5	30 OCT	3 NOV	CLT5: Does the climate change theory contradict the second law of thermodynamics?	CLT5
6	6 NOV	10 NOV	CLT6: Humans choose to burn fossil fuels not just because they generate a lot of energy, fast	CLT6
7	13 NOV	17 NOV	CLT7: Human factors in climate change and alternative energy Midterm Exam: TBA	CLT7
BRAIN MODULE				
8	20 NOV	24 NOV	BRN1: How complex is the brain? How can we understand how it works?	BRN1
9	27 NOV	1 DEC	BRN2: All cells maintain a potential difference to sense the world	BRN2
10	4 DEC	8 DEC	BRN3: Information is communicated in cells through electricity: Action potential.	BRN3
11	11 DEC	15 DEC	BRN4: Neuronal cell membrane can be mathematically modeled by simple circuits	BRN4
12	18 DEC	22 DEC	BRN5: Neurons Communicate Fast, Efficiently and Continuously to Keep Us Functioning	BRN5
13	25 DEC	29 DEC	BRN6: How can we measure brain activity and interpret the data?	BRN6
14	1 JAN	5 JAN	BRN7: How does the brain function and how does our mind work? Inner workings of brain and cognitive science Final Exam: To Be Arranged by SR	BRN7

*CLT: Climate module, BRN: Brain module

ASP Peer Study and Discussion Sessions:

Peer Study/Discussion Sessions of Academic Support Program (ASP/ADP) are based on collaboration with your peers and aim to develop your critical thinking, communication, and study skills. You may attend the sessions to improve your academic success in NS 102.

Registration is required and the capacity is limited.

You may find out weekly schedule of ASP sessions [from this link](#).



NS102 Sustainable Development Goals