

## Assessment of General Chemistry I (KIM101 and KIM101E) Courses 2019/2020 Fall Semester

**General Chemistry I (KIM 101 and KIM 101E)** course is designed to emphasize problem solving skills and critical thinking to engineering students as they learn the principals of chemistry and help them to focus into the world of science and engineering.

General Chemistry I courses are given in two languages; Turkish and English:

**KIM 101 Genel Kimya I**, course language Turkish (3 credits)

**KIM 101E General Chemistry I**, course language English (3 credits)

Chemistry Department opens these courses every Fall and Spring semesters with parallel sessions.

Students must attend the session for which they are registered. A minimum of **70% attendance is required**. Periodic attendance checks are taken in class. **A student who is absent for 5 lectures (over 14 lectures) gets VF** (fails without midterm or final exam).

All the students registered in the course, regardless of their course language, take the same midterm and final exam on the same day and at the same time. Grade distributions are done separately for Turkish and English sessions (as KIM101 and KIM101E) and all students are considered in the same grade distribution based on their course language. Students take a *multiple-choice test exam* as midterm and final exam about their general knowledge in chemistry. Exam papers are standardized so that the grade entry may be done using an optic reader. This offers the advantage of speed and lessens errors. The grades are recorded and are posted on the website ([www.kimyahavuz.itu.edu.tr](http://www.kimyahavuz.itu.edu.tr)) and students are able to check their optic exam-answer sheets from there, as well. Additionally, syllabuses, needed documents, exam locations and announcements for the courses are given through the same website. Instructors can access information about their students and course statistics through the site <https://otm.kimya.itu.edu.tr/o/>.

The grading scheme for the exams is: **Midterm I 25 %, Midterm II 25 %, Final exam 50%**.

Each semester **an exam committee** is appointed to KIM 101 and KIM 101E courses from Department members who teach General Chemistry courses. The Committee assists with determining the exam content, writing new exam questions and editing exam questions to ensure that the exams are of the highest quality.

Each semester **a course coordinator** is also appointed to KIM 101 and KIM 101E courses. Course coordinator is responsible for planning and coordinating the delivery of the Course and for ensuring an appropriate assessment with the Head of the Department, who has the final responsibility. The coordinator is also responsible of organizing and grading the exam papers. At the beginning of each semester, a meeting for all KIM 101 and KIM 101E instructors is arranged by the course coordinator. Important points (related with the syllabus, the attendance to the courses, the use of legal website of the textbook (<http://cwx.prenhall.com/petrucci>), etc.) are considered and are given to the attention of the instructors. Discussions on these points help General Chemistry Course Instructors for useful and reasonable ideas for the next semester.

For student queries, the course instructors allocate a 2-hour “office- hour” period. This is announced in the lectures and is indicated on a weekly course schedule hung on instructor’s office door.

This semester, a total of **2492 students (KIM 101 – 952 students and KIM 101E – 1540 students)** from various departments took the course in **35 parallel sessions**.

In Table 1, the average grades for midterm and final exams of KIM 101 and KIM 101E courses are given and compared. (KIM 101 and KIM 101E ; 2019/2020 Fall Semester.)

**Table 1.** 2019/2020 Fall– Averages of KIM 101 and KIM 101E Courses (points are over 100)

	Midterm I	Midterm II	Final exam	General Average
<b>KIM 101</b>	63.20	53.10	50.00	54.08
<b>KIM 101E</b>	56.50	46.35	43.75	47.59

Table 2 and Table 3, shows the averages of the grades for KIM 101 and KIM 101E courses for the previous semesters.

**Table 2.** Averages for **KIM 101** sessions (2014/15 Fall-2019/20 Fall )- (points are given over 100)

	Midterm		Final exam	General Averages
<b>2014/2015 Fall*</b>	55.8		48.6	51.48
<b>2014/2015 Spring*</b>	54.95		50.44	52.25
<b>2015/2016 Fall*</b>	60.00		42.76	49.66
<b>2015/2016 Spring*</b>	53.64		46.4	49.3
<b>2016/2017 Fall*</b>	44.76		39.84	41.81
<b>2016/2017 Spring*</b>	48.20		50.44	49.54
<b>2017/2018 Fall*</b>	61		49.8	54.28
	Midterm I	Midterm II		
<b>2017/2018 Spring*</b>	59.1	42.5	39.55	45.18
<b>2018/2019 Fall*</b>	63.2	52.55	46.65	52.26
<b>2018/2019 Spring*</b>	55.6	48.40	42.85	47.43
<b>2019/2020 Fall*</b>	<b>63.20</b>	<b>53.10</b>	<b>50.00</b>	<b>54.08</b>

\*multiple choice exam

**Table 3.** Averages for **KIM 101E** sessions (2014/15 Fall-2019/20 Fall)- (points are given over 100)

	Midterm		Final exam	General Averages
<b>2014/2015 Fall*</b>	48.12		42	44.45
<b>2014/2015 Spring*</b>	55.4		49.24	51.7
<b>2015/2016 Fall*</b>	52.68		36.16	42.77
<b>2015/2016 Spring*</b>	53.28		44.6	48.07
<b>2016/2017 Fall*</b>	37.6		34.8	35.92
<b>2016/2017 Spring*</b>	48.56		47.16	47.72
<b>2017/2018 Fall*</b>	52.29		43.6	47.08
	Midterm I	Midterm II		
<b>2017/2018 Spring*</b>	59.9	41.65	41.15	45.96
<b>2018/2019 Fall*</b>	59.8	49.55	43.70	49.19
<b>2018/2019 Spring*</b>	57.25	47.25	44.35	48.30
<b>2019/2020 Fall*</b>	<b>56.50</b>	<b>46.35</b>	<b>43.75</b>	<b>47,59</b>

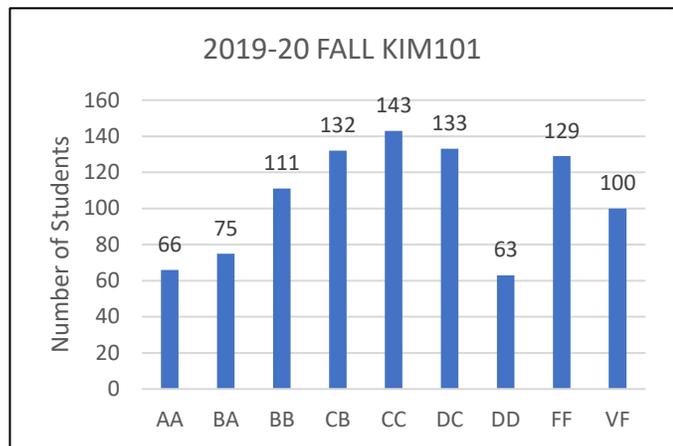
\*multiple choice exam

As can be noticed from the given Tables, there is a significant difference in grade averages between English and Turkish sessions, Turkish ones being higher. The students still have difficulties in following the English courses and understanding the questions asked in the exams. This problem seems to be encountered almost in all courses especially in the first years and has to be solved university-wide.

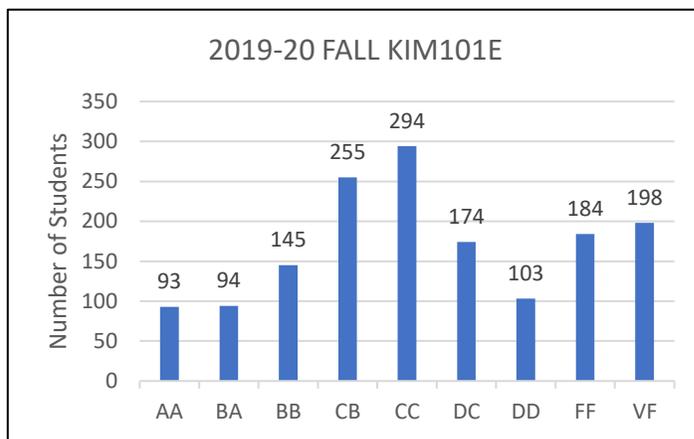
The number of KIM 101 (Turkish session) students who passed the course (including DC and DD) were **723** over **952**, which is **75.94** % of the total students. The number of failed students having FF and VF (without midterm or final exam) grades are **229** which is **24.05** % of the total students.

The number of KIM 101E (English session) students who passed the course (including DC and DD) were **1158** over **1540** which is **75.19 %** of the total students. Fail (FF) and fail without midterm (VF) grades are **382** over **1540**, which is **24.81 %** of the total students.

**Figure 1** and **Figure 2** shows the percentages of each grade for KIM101 and KIM101E for 2019-2020 Fall Semester.



**Fig.1** Percentage-grade graph for KIM101



**Fig.2** Percentage-grade graph for KIM101E

**Table 4** and **Table 5** includes the grade distributions, the number of students and percentages for each grade for KIM 101 and KIM 101E sessions for 2019-2020 Fall Semester.

**Table 4.** Grade distributions, number of students and percentages for each grade for **KIM 101** sessions

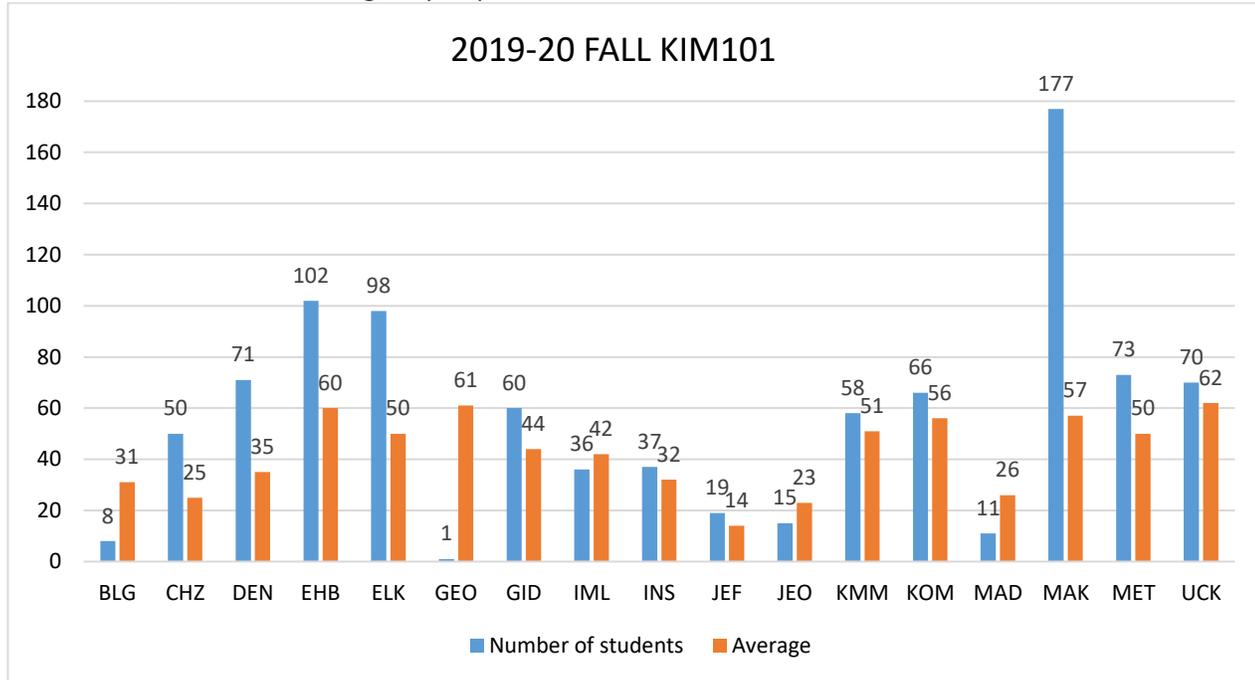
Letter grade	Grade	Number of students	Percentage (%)
AA	Excellent	66	6.93
BA	Good-excellent	75	7.88
BB	Good	111	11.66
CB	Good-satisfactory	132	13.86
CC	satisfactory	143	15.02
DC	Satisfactory-low pass	133	13.97
DD	Low pass	63	6.62
FF	Fail	129	13.55
VF	Fail without midterm	100	10.50

**Table 5.** Grade distributions, number of students and percentages for each grade **KIM 101E** sessions

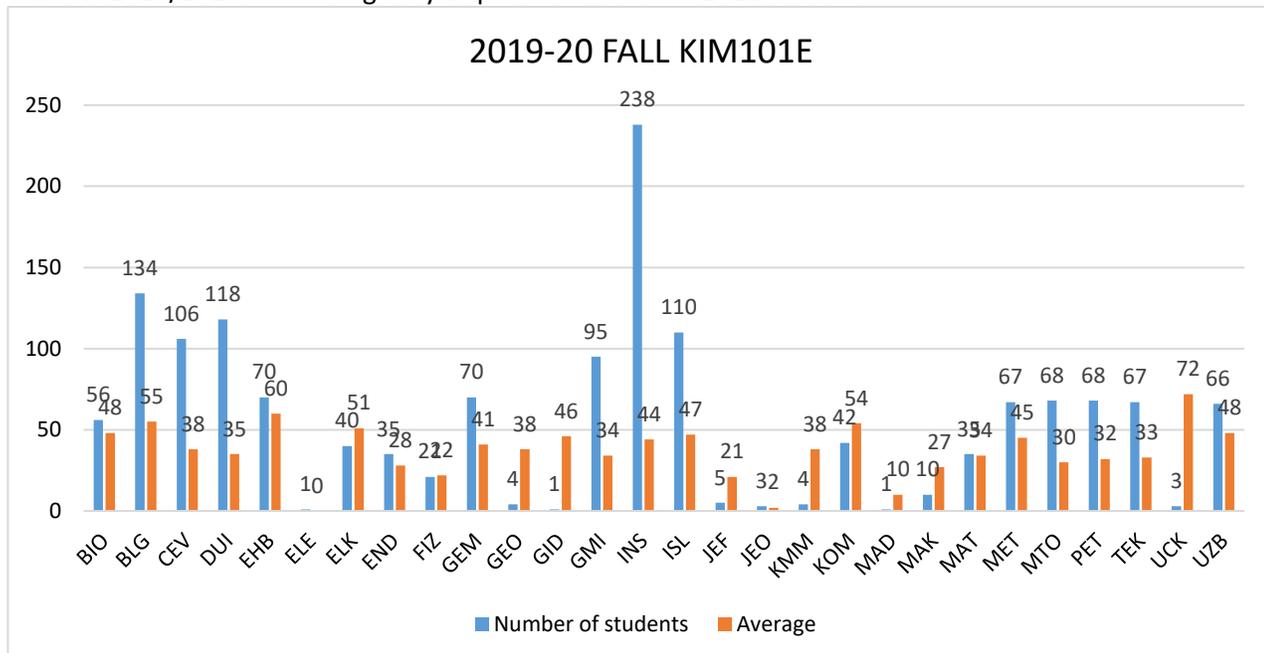
Letter grade	Grade	Number of students	Percentage (%)
AA	Excellent	93	6.04
BA	Good-excellent	94	6.10
BB	Good	145	9.42
CB	Good-satisfactory	255	16.56
CC	satisfactory	294	19.09
DC	Satisfactory-low pass	174	11.30
DD	Low pass	103	6.69
FF	Fail	184	11.95
VF	Fail without midterm	198	12.86

In the following **Table 6 and 7**, 2019/2020 Fall student numbers and averages related to each department for KIM 101 and KIM 101E sessions are given, respectively.

**Table 6.** 2019/2020 Fall Averages by Departments for KIM 101 sessions



**Table 7.** 2019/2020 Fall Averages by Departments for KIM 101E sessions



Undergraduate program codes can be reached from the website: <https://www.sis.itu.edu.tr/EN/about-sis/undergraduate-program-codes.php>

The highest averages are from UCK (Aeronautical Engineering), and EHB (Electronics and Communication Engineering) and EHB (Electronics and Communication Engineering) for both KIM101 and KIM101E.

There are also an access related with the course statistics (Outcomes, histograms, syllabus, etc.) through the website <https://otm.kimya.itu.edu.tr/o/>.

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**ABET Committee**