Efi Arazi School of Computer Science

B.Sc. in Computer Science

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The program of the Double Major in B.A in Entrepreneurship and B.Sc. in Computer Science is available in the Entrepreneurship School Printed Handbook

A great deal of effort has been expended in preparing this handbook, in order to ensure that its content is complete and accurate. However, changes and alterations to the information are possible. The Reichman University Academic Authorities may cancel, alter or add courses and/or specialization programs, and generate changes in the times of lectures or in the assigned lecturer. Such changes will be published over the course of the year by various means, such as the online handbook on the university website, and will apply to all Reichman University students, including students of the Raphael Recanati International School, unless specified otherwise.

Introduction

The curriculum of the B.Sc. undergraduate degree in Computer Science includes:

- 22 mandatory and elective courses in Computer Science
- 7 mandatory courses in Mathematics
- 1 English courses
- 2 Business Administration courses
- 4 general elective courses

First Year

First-year students are required to take basic courses in Computer Science, Mathematics, and English. This year is dedicated to mandatory courses only, comprising 42.5 credits (including English courses).

DNA COURSES:

First-year students in the RRIS international programs will be required to complete the DNA course on Zionism during their first year of studies.

Second Year

Second-year students are required to take mandatory courses in Computer Science, as well as Business Administration courses. Students are also required to take 2 Computer Science elective courses. This year comprises 40.5 credits.

Third year

Third-year students are required to complete their mandatory Computer Science and take 7 additional Computer Science elective courses. This year comprises 35.5 credits.

As part of the mandatory courses in computer science this year, the student must choose one of two mandatory courses (each lesson has a recitation):

- Introduction to Computer Graphics (164)
- Deep Learning and Image Understanding– (3994).

CS Important Information

- To pass the courses you must get at least 60 in the final exam.

- In addition to the above, each student is required to take general elective courses comprising 8 credits throughout their studies, to expand their general knowledge.

  Students may choose general elective courses out of all courses offered on campus, provided that the courses are available and that the students meet their prerequisites. Registration for cross-campus courses will be done by applying to the Student Administration during the registration period.

  As part of the requirements in the CS degree, 2nd and 3rd year students must choose a total of 9 CS elective courses from the list of CS electives.
  Two of these electives must be from the category of theoretical elective courses, and the remaining courses, from all elective courses.

- Within the **computer science elective courses,** you may choose a guided field project, either a personal project or a lab project.
  You cannot execute more than one guided field project. If a student did more than one guided field project, one of them will be added to the extra courses and won't be listed on the main transcripts of grades. The Media Innovation Lab (Milab) considered guided field projects.

- As part of computer science elective courses, 3rd year students may register to MSc elective courses. You can find the list of M.Sc. courses is updated in the student handbook.
  A student who has completed one or more MSc elective courses may request, at the end of his/her degree, to convert only one of them into a binary grade.

Academic English Requirements

Every student must fulfill the academic English requirements until the end of the second year of studying (in the three-year program) and until the end of the third year of studying (in the four-year program).

A student who doesn't achieve the required exemption on time won't be able to finish the degree and will have to add another year.
In order to get an exemption, the student must provide the required grade in either the Amir, the Amiram, TOEFL, the Psychometric or the SAT test or pass the Computer Science English Advanced 2 course.

Overall, the B.Sc. students are required to complete 120.5

First Year
B. Sc in Computer Science

Course Code	Course Name	Lecture Hours	Recitation Hours	Total Credit Points	Prerequisites
Fall Semester Courses					
52	Calculus I	4	2	5	
54	Linear Algebra I	4	2	5	
56	Discrete Mathematics	3	2	4	
417	Introduction to Computer Science	4	2	5	
110	English for CS Advanced 2	4		2	
Spring Semester Courses					
53	Calculus II	3	2	4	Calculus I
55	Linear Algebra II	3	2	4	Linear Algebra I
59	Data Structures	3	2	4	Int. to CS
109	Introduction To Probability	3	2	4	Discrete Math Calculus I
3144	System Programming in C	3	1	3.5	Intro. to CS Data Structures (simultaneously)
6953	Modern Zionism in Light of the Declaration of Independence	2		1	
110	English for CS Advanced 2	4		2	
	Total Credits			**41.5**	

In addition to the mandatory courses, CS students are required to take 8 credits of General Elective Courses during the course of their studies. The courses can be chosen out of all courses offered on campus, provided that the courses are available and that the students meet their prerequisites.

Second Year
B. Sc in Computer Science

Course Code	Course Name	Lecture Hours	Recitation Hours	Total Credit Points	Prerequisites
Fall Semester Courses					
77	Algorithms	3	2	5	Discrete Math Data Structures Logic and Set Theory
109	Introduction To Probability	3	2	4	Discrete Math Calculus I
3030	Advanced Programming	3	2	4	Int. to CS
3955	Digital Systems	3		4	Int. to CS, Discrete Mathematics
3979	Fundamentals of Finance	4		4	
Spring Semester Courses					
84	Operating Systems	3	1	4	Data Structures Digital Architectures System /Digital Systems Programming in C
3141	Machine Learning from Data	3	2	4	Calculus I, II Algebra I, II Int. to Probability
3699	Computational Models	3	2	4	Discrete Math Logic and Set Theory Algorithms

Computer Science Elective Courses[1]

- Students in their 2nd and 3rd year must choose a total of **21** credits from "Theoretical" and "All Elective Courses" categories. At least 6 credits must be from the theoretical elective courses category.

  2nd year students can choose a total of **9 credits** from both categories together.

- Prerequisites for each Computer Science elective course is passing grades in all of the first year mandatory CS and Mathematics courses, except for Calculus II and Algebra II in the "All Elective Courses" category. This is in addition to the specific prerequisites of each course, as detailed below:

Fall Semester Courses

3354	3D Animation with Unreal Engine	3	3	Advanced Programming▲ (simultaneously)
3961	Cloud Computing and Software Engineering	3	3	Advanced Programming▲ (simultaneously)

Total Credits **42**

▲ Advanced Programming is a prerequisite or should at least be taken simultaneously to this course.

In addition to the mandatory courses, all CS students are required to take **2** credits of General Elective Courses during the course of their studies. The courses can be chosen out of all courses offered on campus, provided that the courses are available and that the students meet their prerequisites.

[1] The CS elective courses are offered in English. Students are welcome to choose a course offered in Hebrew, as detailed in the handbook of the Hebrew program.

Third Year
B. Sc in Computer Science

Course Code	Course Name	Lecture Hours	Recitation Hours	Total Credit Points	Prerequisites
Fall Semester Courses					
592	Computer Networks	3	1	4	Algorithms Operating Systems
3967	Complexity Theory	3	1	4	Algorithms Computational Models
Spring Semester Courses					
3992	Large Language Models for Software Engineering	3	1	4	

Visual Data courses – 4 credits

You must choose one of the following mandatory courses. Registration will take place during the online registration period.

Course Code	Course Name	Lecture Hours	Recitation Hours	Total Credit Points	Prerequisites
Fall Semester Course					
3994	Deep Learning and Image Understanding	3	1	4	Machine Learning from Data The course is open for B.Sc. students with a total GPA of **80** and above.
164	Introduction to Computer Graphics *	3	1	4	Algorithms

* This course in an online course, except for few lessons which will require physical attendance in class – the dates will be announced.

Computer Science Elective Courses[1]

- Students in their 2nd and 3rd year must choose a total of **18** credits from "Theoretical" and "All Elective Courses" categories. At least 6 credits must be from the theoretical elective courses category.
- Prerequisites for each Computer Science elective course is passing grades in all of the first year mandatory CS and Mathematics courses, <u>except</u> for Calculus II and Algebra II in practical category. This is in addition to the specific prerequisites of each course, as detailed below:

Fall Semester Courses

3119	Guided Project ▲◘ Faculty Staff	3		3	1st year courses and Guidance approval	
3354	3D Animation with Unreal Engine	3		3	Advanced Programming	
3169	Artificial intelligence and Morality	3		3		
3569	Applied Cryptography Workshop ●●	3		3	Introduction To Probability Algorithms	Theoretical
3620	Statistics and Data Analysis ●●●	3	1	3	Introduction To Probability	Theoretical
3924	Advanced Systems Development using AI ■■	3		3	Advanced Programming	
3959	Text Retrieval and Search Engines ●●	3		3	Algebra 1+2 Introduction To Probability Introduction to CS Machine learning from Data	Theoretical
3961	Cloud Computing and Software Engineering	3		3	Advanced Programming	
3979	Advanced Statistical Analysis and Model Based Learning ●●●	3		3	Introduction To Probability	Theoretical

Spring Semester Courses

3523	Natural Language Processing●●●	3		3	Algorithms Machine Learning from Data	Theoretical

[1] The CS elective courses are offered in English. Students are welcome to choose a course offered in Hebrew, as detailed in the handbook of the Hebrew program.

3643	Advanced Topics in Computer Systems Security●●	3		3	Advanced Programming Operating Systems Communications And Networks	Theoretical
3917	Using AI for Malware and Intrusion Detection	3		3	Recommended course: MachineLearning from Data	
3945	Advanced Machine Learning ●●●	3	1	3	Machine Learning from Data	Theoretical

Total Credits **28**

♦ **Intensive course. The specific dates will be published on the course website.**
The course does not earn the student academic credits

▲ For 3rd year students only. The course is on a personal guidance basis and is spread over the entire academic year.

◘ Please note: a student can only register to **one guided project during his/her degree**.
("Guided Field Project-Media Innovation Lab" (3120) is considered guided projects)

● This course is part of the M.Sc. curriculum and is open for B.Sc. students with a total GPA of 70 and above.

●● This course is part of the M.Sc. curriculum and is open for B.Sc. students with a total GPA of 75 and above.

●●● This course is part of the M.Sc. curriculum and is open for B.Sc. students with a total GPA of 80 and above.

●●●● This course is part of the M.Sc. curriculum and is open for B.Sc. students with a total GPA of 85 and above.

■■ A student that previosly studied the course code: 3995 will not be able to choose course code: 3942.

In addition to the mandatory courses, all CS students are required to take 8 credits of General Elective Courses during the course of their studies. The courses can be chosen out of all courses offered on campus, provided that the courses are available and that the students meet their prerequisites.

Exam Schedule

The dates of the examinations can be found on the university website under:
Students > Student Information > Course Catalog, Student Regulations and Syllabus > Search Exams

A personal examinations schedule is published at the Student's Information website (My RUNI).