**The Faculty of Computer Science**

Faculty members

[List of faculty members]

**About the Unit**

The Technion’s Faculty of Computer Science offers undergraduate programs in computer science, software engineering, computer engineering, computer science and mathematics, computer science and physics, a dual degree in medicine and computer science, as well as master’s and doctoral programs. The faculty’s goal is to train students to become outstanding scientists and engineers and provide them with vast and thorough knowledge and a variety of opportunities to develop managerial and technological skills so they will be able to lead present and future knowledge-intensive industries. To that end, the faculty selects the best candidates and maintains high academic standards, providing students with broad and in-depth knowledge to help them succeed in the rapidly changing field of computer science.

The faculty conducts extensive teaching and research activity on a broad range of topics. These include computability, algorithms and their complexity, cyphers and cryptography, machine learning, artificial intelligence, natural language processing (including Hebrew), computer vision, image processing, computer graphics, computational geometry, robotics and automation, software engineering, compilation, formal verification of software and hardware systems, programming languages, data processing and operating systems, computer architecture, computer and internet networks, parallel and distributed algorithms, logic for computer science, neural networks, bioinformatics, quantum information processing, databases, parallel and distributed programing, sorting and routing networks, geometric design, applied mathematics, numerical algorithms, optimization, and applied engineering and scientific specializations.

The faculty is located in a state-of-the-art building designed for the convenience of the faculty members and students. The building's resources include auditoriums and classrooms equipped with some of the most advanced multimedia systems, a large multi-purpose center that provides a modern learning environment, and a cutting-edge library that serves as a contemporary learning center. In addition, it features a wide infrastructure of teaching and research laboratories dealing with a variety of fields, including robotics, computer vision, artificial intelligence, geometric processing, computer graphics and geometric computing, computer communication networks, software systems, computer systems, natural languages processing, cyber and information security, machine learning, information and knowledge, information and memory storage, bioinformatics, and quantum information processing.

**Undergraduate Studies**

The Technion’s Faculty of Computer Science offers several undergraduate programs. These are a general three-year program with a track for learning and analysing information and a general four-year program that includes tracks in cyber and computer systems security; bioinformatics; software engineering; a B.Sc. program in computer science and mathematics; a B.Sc. program in computer science and physics; and a dual bachelor’s degree program in medicine and computer science. Graduates of the computer-engineering program are awarded a Bachelor of Engineering degree.

The curriculum consists of a broad range of topics. These include computability, algorithms and their complexity, cyphers and cryptography, artificial intelligence, natural language processing (including Hebrew), computer vision, robotics and automation, software engineering, compilation, data processing and operating systems, computer organization and programing, computer architecture, computer and internet networks, logic for computer science, bioinformatics, numerical algorithms, optimization, and applied engineering and scientific specializations.

The curriculums consist of three levels. The first, which is studied in the first three semesters, provides basic knowledge of the primary subjects: mathematics, physics, programming fundamentals, and more. The second includes compulsory faculty courses. In the joint engineering program, compulsory courses also include courses from the Faculty of Electrical Engineering. In the **computer science track with a focus on bioinformatics**, compulsory courses also include courses from the Faculty of Biology. In the computer science and mathematics and computer science and physics programs compulsory courses also include advanced mathematics and physics courses. On this level, students receive fundamental knowledge of each of the faculty’s fields of specialization. This way, the faculty ensures that all its graduates have an extensive background in their field of studies. The third level of the curriculum consists of the faculty’s elective courses, which allow students to specialize and delve deeper into the subjects that interest them. In addition, as part of their studies students work on projects in some of the laboratories and by doing so acquire practical experience in their field.

The B.Sc. programs in computer science and mathematics and computer science and physics are admission programs students need to enroll in when enrolling for the Technion. Choosing a program from those offered by the faculty is generally done at the end of the second semester, however this can also be done at a later date. Students can also transition from one program to another later on in their studies.

**Computer science programs offered by the faculty:**

**General computer science programs**

There are two general B.Sc. in Computer Science programs: a three-year program and a four-year program. These are intended for students interested in a range of computer science fields, such as software and hardware studies, computer design and applications, artificial intelligence, computer science theory, and more.

* As part of the **three-year program** students can also choose a specific study track:

**The Learning and Analyzing Information Track**

The goal of this program is for graduates to specialize in information and signal collection, processing, and analysis; and method and algorithm research in these fields. The track focuses on the principles of handling information and generating content from it by using signal processing tools, statistical inference, and machine learning. The program provides its graduates with a broad background in computer science alongside mathematical enrichment and courses specializing in information, including how to collect it, process it, and learn from it. Graduates are awarded the degree of B.Sc. in Computer Science. The track will be noted on a conformation document that will be attached to their diploma and grade sheet. The same applies to those who complete the general four-year program and the software engineering program who also complete the track requirements.

* As part of the **four-year program** students can also choose specific study tracks:

**The Cyber and Computerized Systems Security Track**

The goal of this program is to produce graduates who specialize in cyber security. The track provides its graduates with a broad background in computer science focusing on theoretical and practical aspects of security in the digital world. Graduates receive the degree of B.Sc. in Computer Science. The track will be noted on a conformation document that will be attached to their diploma and grade sheet.

**The Computer Science Track with a Focus on Bioinformatics**

This is a joint program in collaboration with the Faculty of Biology that provides students with extensive knowledge of a range of computer science fields, alongside fundamental knowledge of molecular and cell biology, with a focus on bioinformatics and bioinformatics software and systems. The program’s goal is to qualify graduates to be able to join and lead bioinformatics industries or continue to graduate studies that combine an understanding of life sciences and computer science. The program is intended for students accepted through the Faculty of Computer Science, while academic responsibility for their studies is shared by the Faculty of Computer Science and the Faculty of Biology. Graduates receive the degree of B.Sc. in Computer Science. The track will be noted on a conformation document that will be attached to their diploma and grade sheet.

**The Software Engineering Track**

A four-year track B.Sc. in Software Engineering, the goal of which is to train its graduates to specialize in large software systems. The track focuses on a range of programing methods and systematic handling of software analysis, content, application, testing, verification, maintenance, assessment, and conversion actions. The tracks provides graduates with extensive knowledge of applied computer science and in-depth practical experience in creating software and using advanced software engineering tools.

**The Computer Engineering Track**

A four-year track B.Sc. in Computer Engineering that awards its graduates an engineering degree, offered in collaboration with the Faculty of Electrical Engineering. The track’s goal is to produce graduate computer engineers with extensive software and hardware knowledge, specializing in designing and building electronic systems (including computers).

**The B.Sc. Program in Computer Science and Mathematics**

This is a three-year program offered in collaboration with the Faculty of Mathematics that awards its graduates the degree of B.Sc. in Computer Science and Mathematics. The track is intended for students with particularly high admission scores. Its goal is to allow students to gain extensive knowledge of both computer science and mathematics, so they will be able to join and lead the research and industry that require in-depth knowledge and capabilities in both fields. This track differs from the dual degree program in that it requires a separate enrollment route and the curriculum is set in advance.

**The B.Sc. Program in Computer Science and Physics**

This is a four-year program offered in collaboration with the Faculty of Physics that awards its graduates the degree of B.Sc. in Computer Science and Physics. The track is intended for students with particularly high admission scores. Its goal is to allow students to gain extensive knowledge of both computer science and physics, so they will be able to join and lead the research and industry that require in-depth knowledge and capabilities in both fields. This track differs from the dual degree program in that it requires a separate enrollment route, and the curriculum is set in advance and can be completed over four years.

**The Dual Degree in Medicine and Computer Science Program**

The Faculty of Medicine and the Faculty of Computer Science offer a dual degree track intended for outstanding students with particularly high admission scores. The track’s goal is to train its graduates to have extensive knowledge of both computer science and medicine, so they will be able to join and become leaders in each of the separate fields as well as in research, development, and industry fields that require in-depth knowledge of both. Graduates are awarded the degrees of B.Sc. in Computer Science and B.Sc. in Medical Sciences. The program is intended for students who are admitted to medicine studies and are interested in doing an additional degree in computer science.

**Secondary Specialization**

**Secondary Specialization in Quantum Computation**

The Faculty of Computer Science also offers a scientific enrichment program in quantum computers and quantum information. This program can be added to all the faculty’s study programs, including the joint tracks. Students who complete this specialization are awarded a certificate that confirms they have successfully completed it.

**Excellence Programs and Scholarships**

**The Lapidim Excellence Program**

An excellence program supported by leading companies in the industry intended to produce outstanding computer science graduates with exceptional leadership skills in the fields of entrepreneurship and management, and prepare them for taking on key roles in the industry. Program participants must meet all the study requirements of their track (including joint programs), take several managerial and entrepreneurial courses, and participate in activities sponsored by leading hi-tech companies. Participants are entitled to special conditions, including the mentorship of a faculty member, exemption from tuition fees, and a subsistence scholarship. In addition, they are provided with a dedicated state-of-the-art study area.

**The Academic Leadership Excellence Program**

An excellence program intended to train outstanding students with potential to have an academic career as future researchers and university faculty members. Program participants must meet all the requirements of their track (including joint programs) and meet dedicated program requirements and courses based on their research focus. In addition, they are required to participate in special activities and are entitled to special conditions, including the mentorship of a faculty member, exemption from tuition fees, and a subsistence scholarship.

**The Excellence Track for Enhanced Software Engineering and the Psagot Program for Outstanding Academic Reserve Students**

A software engineering excellence program intended to train the next generation of research and development leaders in technology-intensive industries in the security forces. Program participants complete all the requirements for a B.Sc. in Software Engineering and most of the required courses for a master’s degree over the course of a four-year curriculum.

**SAMBA – Outstanding Computer Science Students**

In an aim to promote excellence, the faculty provides one-time scholarships to outstanding undergraduate students. The program is intended for all faculty students, in all tracks, including joint tracks. Acceptance to the program is based on criteria that are updated occasionally.

**Advancing to Graduate Studies**

High achieving graduates with a B.Sc. in Computer Science or related fields can continue their studies towards a master’s degree or Ph.D. as part of the faculty’s graduate studies. Students who completed the computer engineering program will also be able to continue their graduate studies in the Faculty of Electrical Engineering. Likewise, students who completed the computer science track with a focus on bioinformatics can continue their graduate studies in molecular biology in the Faculty of Biology. Students who completed the B.Sc. in Computer Science and Mathematics program can also continue their studies in the Faculty of Mathematics, and students who completed the B.Sc. in Computer Science and Physics program can also continue their studies in the Faculty of Physics.

**Curriculums**

In order to meet the degree requirements, students must accumulate credits from three groups of courses, as specified in each of the curriculums below. This refers to compulsory courses, elective faculty courses, and elective Technion courses.

Each curriculum includes 12 credits (10 credits in three-year programs) of elective Technion programs, from which at least 6 credits are from enrichment courses (aside from the dual degree track in medicine and computer science); at least two credits are physical education courses; and students can select elective courses from any of the courses the Technion offers, subject to the rules for enrolling to each course.

**Study Programs in the General Four-Year Track**

In order to complete the degree, students must accumulate 155.0 credits, according to the following specification:

|  |  |
| --- | --- |
| Compulsory courses | 87.0 credits |
| Elective faculty courses | 56.0 credits |
| Elective Technion courses | 12.0 credits |

Le – lecture; E – exercise; La – lab; P – project; C – credits

**Compulsory Courses**

Recommended course sets, by semesters:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1st semester | | Le | E | La | P | C |
| 104031 |  | 4 | 3 | - | - | 5.5 |
| 104166 |  | 4 | 3 | - | - | 5.5 |
| 234114\* |  | 2 | 2 | 2 | - | 4.0 |
| 234129 |  | 2 | 2 | - | - | 3.0 |
| 324033 |  | 4 | - | - | - | 3.0 |
|  |  | 16 | 10 | 2 | - | 21.0 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 12 |  |  | 22.0 |

\* This course must be taken in the 1st semester.

Please note: Students interested in bioinformatics should also take XXXX (134058) and XXXX (134020) as early as possible.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2nd semester | | Le | E | La | P | C |
| 104032 |  | 4 | 2 | - | - | 5.0 |
| 114071 |  | 3 | 1 | - | - | 3.5 |
| 234124 |  | 2 | 2 | - | 2 | 4.0 |
| 234125\*\* |  | 2 | 2 | - | - | 3.0 |
| 234141 |  | 2 | 1 | - | 1 | 3.0 |
|  |  | 13 | 8 | - | 3 | 18.5 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 10 |  |  | 19.5 |

\*\* XXXX can be taken in the 2nd semester and XXXX in the 3rd, or vice versa.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 3rd semester | | Le | E | La | P | C |
| 094412 |  | 3 | 2 | - | - | 4.0 |
| 104134\*\*\* |  | 2 | 1 | - | - | 2.5 |
| 234218 |  | 2 | 1 | 1 | - | 3.0 |
| 044252/  234252 |  | 4 | 2 | - | - | 5.0 |
| 234292 |  | 2 | 1 |  | - | 3.0 |
|  |  | 13 | 7 | 1 |  | 17.5 |

\*\*\* Students can take XXXX (104158) and XXXX (104279) instead of XXXX and the additional math course.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4th semester | | Le | E | La | P | C |
|  | An additional math course\* |  |  |  |  | 2.5/5.0 |
|  | A scientific course\*\* |  |  |  |  | 3.0/5.0 |
| 234118 |  | 2 | 1 | 1 | - | 3.0 |
| 234123 |  | 2 | 2 | 3 | 6 | 4.5 |
| 234247 |  | 2 | 1 | - | - | 3.0 |
|  |  |  |  |  |  | 16/20.5 |

\*\* See one of the following scientific courses

\* One of the following courses:

Credits

|  |  |  |
| --- | --- | --- |
| 104135 | XXXX (1) | 2.5 |
| 104033 |  | 2.5 |
| 104174 |  | 3.5 |
| 104122 |  | 3.5 |
| 104142 |  | 3.5 |
| 104285 |  | 3.5 |
| 104295 |  | 5.0 |

1. This course is considered an additional math course only for students learning XXXX (114073), XXXX (115203), XXXX (124400), or XXXX (114101).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
|  | A scientific course\*\* |  |  |  |  | 3.0/5.0 |
| 236267 |  | 2 | 1 | - | 1 | 3.0 |
| 236343 |  | 2 | 1 | - | 1 | 3.0 |
| 236360 |  | 2 | 1 | - | - | 3.0 |
|  |  |  |  |  |  | 12/14 |

\*\* See the following scientific courses:

**Scientific Courses**

Students must choose at least 8 credits from the following scientific courses while meeting the following chain requirements. If students take more than 8 credits, these will be considered elective courses from List B:

|  |  |  |
| --- | --- | --- |
| 114075 |  | 5.0 |
| 114052 |  | 3.5 |
| 114054 |  | 3.5 |
| 114073 |  | 3.5 |
| 114101 |  | 4.0 |
| 114246 |  | 5.0 |
| 124120 |  | 5.0 |
| 125001 |  | 3.0 |
| 125801 |  | 5.0 |
| 124510 |  | 4.0 |
| 134058 |  | 3.0 |
| 134020 |  | 3.5 |

The courses chosen need to complete one of the four following chains:

1. The physics chain

Credits

|  |  |  |
| --- | --- | --- |
| 114075 |  | 5.0 |
|  | Or the two following courses: |  |
| 114052 |  | 3.5 |
| 114054 |  | 3.5 |

1. The biology chain

Credits

|  |  |  |
| --- | --- | --- |
| 134058 |  | 3.0 |
| 134020\* |  | 3.5 |

\* XXXX is open for enrollment only once a year.

1. The chemistry chain

Credits

|  |  |  |
| --- | --- | --- |
| 124120 |  | 5.0 |
| 125801 |  | 5.0 |
| Or |  |  |
| 124510 |  | 4.0 |

1. The physics-chemistry chain

Credits

|  |  |  |
| --- | --- | --- |
| 124120 |  | 5.0 |
| 114052 |  | 3.5 |

**Elective Courses**

Students are required to take 56 elective faculty credits, as follows. They must complete three different specialization groups from the 11 groups specified below. Completing three groups means taking nine different courses, three from each group, and meeting the compulsory requirements of each group, if there are any. At least 26 credits must be taken from the three chosen specialization groups. Fifteen additional credits need to be chosen from List A (all computer science faculty courses) and an additional 15 credits from List A or List B (elective Technion courses) appearing below.

Every student is required to participate in either two projects or one project and one seminar (see the Miscellaneous section in regard to the follow-up software project course).

**Specialization Groups**

1. Computational complexity

|  |  |  |
| --- | --- | --- |
| 236306 |  | 2.0 |
| 236307 |  | 2.0 |
| 236308 |  | 3.0 |
| 236309 |  | 3.0 |
| 236313 |  | 3.0 |
| 236315 |  | 3.0 |
| 236318 |  | 2.0 |
| 236359 |  | 3.0 |
| 236374 |  | 3.0 |
| 236377 |  | 3.0 |
| 236378 |  | 2.0 |
| 236508 |  | 2.0 |
| 236518 |  | 2.0 |
| 236521 |  | 2.0 |
| 236525 |  | 3.0 |
| 236760 |  | 2.0 |

236313 is compulsory.

1. Algorithm theory

|  |  |  |
| --- | --- | --- |
| 236315 |  | 3.0 |
| 236357 |  | 3.0 |
| 236359 |  | 3.0 |
| 236377 |  | 3.0 |
| 236521 |  | 2.0 |
| 236715 |  | 3.0 |
| 236719 |  | 3.0 |
| 236755 |  | 3.0 |
| 236760 |  | 2.0 |
| 236779 |  | 2.0 |
| 238739 |  | 2.0 |

1. Logic and its applications

|  |  |  |
| --- | --- | --- |
| 236025 |  | 2.0 |
| 236026 |  | 2.0 |
| 236304 |  | 3.0 |
| 236342 |  | 3.0 |
| 236345 |  | 3.0 |
| 236356 |  | 3.0 |
| 236368 |  | 3.0 |
| 236378 |  | 2.0 |

1. Cryptology, cyphers, and information

|  |  |  |
| --- | --- | --- |
| 236309 |  | 3.0 |
| 236350 |  | 3.0 |
| 236379 |  | 3.0 |
| 236500 |  | 3.0 |
| 236506 |  | 3.0 |
| 236508 |  | 2.0 |
| 236520 |  | 2.0 |
| 236525 |  | 3.0 |
| 236990 |  | 3.0 |

Students must take either 236309 or 236506.

1. Software system development

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 236268 |  | 3.0 |
| 236271 |  | 2.0 |
| 236278 |  | 3.0 |
|  |  |  |
| 236319 |  | 3.0 |
| 236321 |  | 3.0 |
| 236332 |  | 2.0 |
| 236342 |  | 3.0 |
| 236347 |  | 3.0 |
| 236363 |  | 3.0 |
| 236368 |  | 3.0 |
| 236369 |  | 3.0 |
| 236376 |  | 4.0 |
| 236490 |  | 3.0 |
| 236491 |  | 3.0 |
| 236496 |  | 3.0 |
| 236700 |  | 3.0 |
| 236703 |  | 3.0 |
| 236712 |  | 2.0 |
| 236780 |  | 2.0 |

236319 is compulsory.

1. Distributed systems and communication networks

|  |  |  |
| --- | --- | --- |
| 236026 |  | 2.0 |
| 236322 |  | 3.0 |
| 236334 |  | 3.0 |
| 236341 |  | 3.0 |
| 236350 |  | 3.0 |
| 236351 |  | 3.0 |
| 236357 |  | 3.0 |
| 236369 |  | 3.0 |
|  |  |  |
| 236370 |  | 3.0 |
| 236377 |  | 3.0 |
| 236422 |  | 3.0 |
| 236490 |  | 3.0 |
| 236510 |  | 3.0 |
| 236700 |  | 3.0 |
| 236755 |  | 3.0 |

Students must take either 236334 or 236370

1. Computer systems

|  |  |  |
| --- | --- | --- |
| 236268 |  | 3.0 |
| 236278 |  | 3.0 |
| 236322 |  | 3.0 |
| 236334 |  | 3.0 |
| 236347 |  | 3.0 |
|  |  |  |
| 236350 |  | 3.0 |
| 236363 |  | 3.0 |
| 236369 |  | 3.0 |
| 236376 |  | 4.0 |
| 236379 |  | 3.0 |
| 236422 |  | 3.0 |
| 236490 |  | 3.0 |
| 236491 |  | 3.0 |
| 236496 |  | 3.0 |
| 236510 |  | 3.0 |
| 236703 |  | 3.0 |
| 236780 |  | 2.0 |

236363 is compulsory.

1. Computer vision and robotics

|  |  |  |
| --- | --- | --- |
| 236201 |  | 3.0 |
| 236330\* |  | 3.0 |
| 236372 |  | 3.0 |
|  |  |  |
| 236777 |  | 3.0 |
| 236781 |  | 3.0 |
| 236860 |  | 3.0 |
| 236861 |  | 3.0 |
| 236862 |  | 3.0 |
|  |  |  |
| 236873 |  | 3.0 |
| 236875 |  | 3.0 |
| 236901 |  | 2.0 |
| 236927 |  | 3.0 |
| 238790 |  | 2.0 |
| 104177 |  | 3.5 |

\* Or 046197 XXXX; 236201 is compulsory.

1. Computational geometry and computer graphics

|  |  |  |
| --- | --- | --- |
| 236216 |  | 3.0 |
| 236324 |  | 3.0 |
| 236329 |  | 3.0 |
| 236373 |  | 3.0 |
| 236716 |  | 3.0 |
| 236719 |  | 3.0 |
| 104177 |  | 3.5 |
| 238739 |  | 2.0 |

236216 is compulsory.

1. Machine learning and artificial intelligence

|  |  |  |
| --- | --- | --- |
| 236201 |  | 3.0 |
| 236299 |  | 3.0 |
| 236372 |  | 3.0 |
| 236501 |  | 3.0 |
| 236756 |  | 3.0 |
| 236760 |  | 2.0 |
| 236777 |  | 3.0 |
| 236779 |  | 2.0 |
| 236781 |  | 3.0 |
| 236901 |  | 2.0 |
| 236941 |  | 3.0 |
| 094423 |  | 3.5 |

236501 is compulsory.

1. Bioinformatics

|  |  |  |
| --- | --- | --- |
| 236522 |  | 3.0 |
| 236523 |  | 2.5 |
| 094423 |  | 3.5 |
| 124120 |  | 5.0 |
| 125001 |  | 3.0 |
| 125801 |  | 5.0 |
| 134019 |  | 2.5 |
| 134020 |  | 3.5 |
| 134058 |  | 3.0 |
| 134082 |  | 2.5 |

236522 and 094423 are compulsory.

Please note: Aside from one course, the biology and chemistry courses in this specialization group will be considered elective courses from List B.

**List A**

All computer science faculty courses, specifically:

Credits

|  |  |  |
| --- | --- | --- |
| 234301 |  | 3.0 |
| 234302 |  | 3.0 |
| 234303 |  | 3.0 |
| 234304 |  | 3.0 |
| 234306 |  | 4.0 |
| 234313 |  | 3.0 |
|  |  |  |
| 234326 |  | 3.0 |
| 234329 |  | 4.0 |
| 234493 |  | 1.0 |
| 234901 |  | 3.0 |
| 236025 |  | 2.0 |
| 236026 |  | 2.0 |
| 236201 |  | 3.0 |
| 236216 |  | 3.0 |
| 236270 |  | 3.0 |
| 236271 |  | 2.0 |
| 236272 |  | 3.0 |
| 236278 |  | 3.0 |
| 236268 |  | 3.0 |
| 236299 |  | 3.0 |
| 236303 |  | 3.0 |
| 236304 |  | 3.0 |
| 236305 |  | 3.0 |
| 236306 |  | 2.0 |
| 236307 |  | 2.0 |
| 236308 |  | 3.0 |
| 236309 |  | 3.0 |
| 236310 |  | 3.0 |
| 236311 |  | 3.0 |
| 236313 |  | 3.0 |
| 236315 |  | 3.0 |
| 236318 |  | 2.0 |
| 236319 |  | 3.0 |
| 236321 |  | 3.0 |
| 236322 |  | 3.0 |
| 236323 |  | 3.0 |
| 236324 |  | 3.0 |
| 236328 |  | 3.0 |
| 236329 |  | 3.0 |
| 236330 |  | 3.0 |
| 236332 |  | 2.0 |
| 236333 |  | 3.0 |
| 236334 |  | 3.0 |
| 236336 |  | 3.0 |
| 236339 |  | 2.0 |
| 236340 |  | 3.0 |
| 236341 |  | 3.0 |
| 236342 |  | 3.0 |
| 236345 |  | 3.0 |
| 236346 |  | 3.0 |
| 236347 |  | 3.0 |
| 236348 |  | 3.0 |
| 236349 |  | 3.0 |
| 236350 |  | 3.0 |
| 236351 |  | 3.0 |
| 236356 |  | 3.0 |
| 236357 |  | 3.0 |
| 236358 |  | 2.0 |
| 236359 |  | 3.0 |
| 236361 |  | 3.0 |
| 236363 |  | 3.0 |
| 236366 |  | 3.0 |
| 236368 |  | 3.0 |
| 236369 |  | 3.0 |
| 236370 |  | 3.0 |
| 236371 |  | 3.0 |
| 236372 |  | 3.0 |
| 236373 |  | 3.0 |
| 236374 |  | 3.0 |
| 236375 |  | 3.0 |
| 236376 |  | 4.0 |
| 236377 |  | 3.0 |
| 236378 |  | 2.0 |
| 236379 |  | 3.0 |
| 236381 |  | 4.0 |
| 236388 |  | 3.0 |
| 236422 |  | 3.0 |
| 236490 |  | 3.0 |
| 236491 |  | 3.0 |
| 236496 |  | 3.0 |
| 236499 |  | 3.0 |
| 236500 |  | 3.0 |
| 236501 |  | 3.0 |
| 236502 |  | 3.0 |
| 236503 |  | 3.0 |
| 236504 |  | 3.0 |
| 236506 |  | 3.0 |
| 236508 |  | 2.0 |
| 236509 |  | 3.0 |
| 236510 |  | 3.0 |
| 236512 |  | 3.0 |
| 236513 |  | 3.0 |
| 236515 |  | 2.0 |
| 236518 |  | 2.0 |
| 236520 |  | 2.0 |
| 236521 |  | 2.0 |
| 236522 |  | 3.0 |
| 236523 |  | 2.5 |
| 236524 |  | 3.0 |
| 236525 |  | 3.0 |
| 236526 |  | 3.0 |
| 236612 |  | 3.0 |
| 236613 |  | 2.0 |
| 236620 |  | 2.0 |
| 236621 |  | 3.0 |
| 236622 |  | 2.0 |
| 236623 |  | 3.0 |
| 236624 |  | 2.0 |
| 236625 |  | 3.0 |
| 236627 |  | 3.0 |
| 236628 |  | 2.0 |
| 236629 |  | 3.0 |
| 236630 |  | 2.0 |
| 236631 |  | 3.0 |
| 236632 |  | 2.0 |
| 236633 |  | 3.0 |
| 236634 |  | 2.0 |
| 236635 |  | 3.0 |
| 236637 |  | 3.0 |
| 236638 |  | 2.0 |
| 236640 |  | 2.0 |
| 236641 |  | 3.0 |
| 236643 |  | 3.0 |
| 236644 |  | 2.0 |
| 236645 |  | 3.0 |
| 236646 |  | 2.0 |
| 236647 |  | 3.0 |
| 236648 |  | 2.0 |
| 236649 |  | 3.0 |
| 236650 |  | 2.0 |
| 236651 |  | 3.0 |
| 236652 |  | 2.0 |
| 236653 |  | 3.0 |
| 236654 |  | 2.0 |
| 236655 |  | 3.0 |
| 236657 |  | 3.0 |
| 236658 |  | 2.0 |
| 236660 |  | 2.0 |
| 236661 |  | 3.0 |
| 236662 |  | 2.0 |
| 236663 |  | 3.0 |
| 236664 |  | 2.0 |
| 236667 |  | 3.0 |
| 236698 |  | 2.0 |
| 236700 |  | 3.0 |
| 236703 |  | 3.0 |
| 236712 |  | 2.0 |
| 236715 |  | 3.0 |
| 236716 |  | 3.0 |
| 236719 |  | 3.0 |
| 236729 |  | 3.0 |
| 236754 |  | 3.0 |
| 236755 |  | 3.0 |
| 236756 |  | 3.0 |
| 236757 |  | 3.0 |
| 236760 |  | 2.0 |
| 236777 |  | 3.0 |
| 236779 |  | 2.0 |
| 236780 |  | 2.0 |
| 236781 |  | 3.0 |
| 236800 |  | 2.0 |
| 236811 |  | 2.0 |
| 236812 |  | 2.0 |
| 236813 |  | 2.0 |
| 236814 |  | 2.0 |
| 236815 |  | 2.0 |
| 236816 |  | 2.0 |
| 236817 |  | 2.0 |
| 236818 |  | 2.0 |
| 236819 |  | 2.0 |
| 236820 |  | 2.0 |
| 236821 |  | 2.0 |
| 236822 |  | 2.0 |
| 236823 |  | 2.0 |
| 236824 |  | 2.0 |
| 236825 |  | 2.0 |
| 236826 |  | 2.0 |
| 236827 |  | 2.0 |
| 236828 |  | 3.0 |
| 236829 |  | 2.0 |
| 236830 |  | 2.0 |
| 236831 |  | 2.0 |
| 236832 |  | 2.0 |
| 236833 |  | 2.0 |
| 236834 |  | 2.0 |
| 236835 |  | 2.0 |
| 236836 |  | 2.0 |
| 236837 |  | 2.0 |
| 236838 |  | 2.0 |
| 236860 |  | 3.0 |
| 236861 |  | 3.0 |
| 236862 |  | 3.0 |
| 236873 |  | 3.0 |
| 236874 |  | 3.0 |
| 236875 |  | 3.0 |
| 236901 |  | 2.0 |
| 236927 |  | 3.0 |
| 236941 |  | 3.0 |
| 236950 |  | 2.0 |
| 236951 |  | 2.0 |
| 236990 |  | 3.0 |
| 236991 |  | 3.0 |
| 238739 |  | 2.0 |
| 238790 |  | 2.0 |
| 238900 |  | 2.0 |
| 238901 |  | 2.0 |
| 238902 |  | 2.0 |

**List B**

Elective Technion courses

Credits

|  |  |  |
| --- | --- | --- |
| 036044 |  | 3.0 |
| 044105 |  | 4.0 |
| 044127 |  | 3.5 |
| 044131 |  | 5.0 |
| 044137 |  | 5.0 |
| 044157 |  | 2.0 |
| 044167 |  | 4.0 |
| 044169 |  | 4.0 |
| 044202 |  | 3.0 |
| 046201 |  | 3.0 |
| 046206 |  | 3.0 |
| 046332 |  | 3.0 |
| 046880 |  | 3.0 |
| 048878 |  | 2.0 |
| 048921 |  | 2.0 |
| 086761 |  | 3.0 |
| 094222 |  | 3.5 |
| 094313 |  | 3.5 |
| 094314 |  | 3.5 |
| 094333 |  | 3.0 |
| 094334 |  | 3.0 |
| 094423 |  | 3.5 |
| 094591 |  | 3.5 |
| 096224 |  | 3.0 |
| 096250 |  | 3.5 |
| 096262 |  | 3.5 |
| 096326 |  | 3.5 |
| 096411 |  | 3.5 |
| 097317 |  | 2.5 |
| 104122 |  | 3.5 |
| 104135 |  | 2.5 |
| 104142 |  | 3.5 |
| 104157 |  | 3.5 |
| 104165 |  | 3.5 |
| 104174 |  | 3.5 |
| 104158 |  | 3.5 |
| 104177 |  | 3.5 |
| 104192 |  | 3.0 |
| 104221 |  | 4.0 |
| 104223 |  | 4.0 |
| 104276 |  | 3.5 |
| 104279 |  | 2.5 |
| 104293 |  | 2.5 |
| 106378 |  | 3.0 |
| 106383 |  | 3.0 |
| 114101 |  | 4.0 |
| 114246 |  | 5.0 |
| 115203 |  | 5.0 |
| 115204 |  | 5.0 |
| 114036 |  | 5.0 |
| 116217 |  | 3.5 |
| 116354 |  | 3.5 |
| 124120 |  | 5.0 |
| 124400 |  | 5.0 |
| 124503 |  | 2.5 |
| 124801 |  | 2.5 |
| 125801 |  | 5.0 |
| 134019 |  | 2.5 |
| 134020 |  | 3.5 |
| 134058 |  | 3.0 |
| 134082 |  | 2.5 |
| 134113 |  | 3.5 |
| 134128 |  | 3.5 |
| 134119 |  | 2.5 |
| 134142 |  | 2.5 |
| 134120 |  | 2.5 |
| 214909 |  | 2.0 |

Students can also choose courses from the list of additional math courses featured as part of the general four-year study track, and other courses as approved by the advisor.

**The Learning and Analysing Information Study Track**

**Goals and requirements for the three-year study track are described below:**

This study track will also be noted in a confirmation document attached to the diploma and grade sheet of students in the general four-year program and software engineering track, provided they meet the requirements and credit quota needed to earn their degree in their regular study track, in addition to the unique requirements (compulsory and core) of the learning and analysing information track.

236201 XXXX and 236756 XXXX are compulsory for this study-track but not for the general four-year study track and software engineering track.

The track’s compulsory and core courses that are also part of the four-year specialization groups will be considered part of meeting the group completion requirements.

The course XXXX (236501) will be considered part of meeting the core course requirement in the software engineering track. The annual project in XXXX will be considered part of fulfilling the track’s project requirement.

**The Cyber and Computerized Systems Security Track**

The goal of this program is to produce graduates who specialize in cyber security. The track provides its graduates with a broad background in computer science focusing on theoretical and practical aspects of security in the digital world. Graduates receive the degree of B.Sc. in Computer Science and the track will be noted on a conformation document attached to their diploma and grade sheet.

**Please note: This recommended curriculum only applies to the winter semester.**

To earn their degree, students must accumulate 155 credits according to the following specification:

|  |  |
| --- | --- |
| Compulsory courses | 106.0 credits |
| Core courses | 8.0 credits |
| Elective faculty courses | 29.0 credits |
| Elective Technion courses | 12.0 credits |

Le – lecture; E – exercise; La – lab; P – project; C – credits

**Compulsory Courses**

Recommended course sets, by semesters:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1st semester | | Le | E | La | P | C |
| 104031 |  | 4 | 3 | - | - | 5.5 |
| 104166 |  | 4 | 3 | - | - | 5.5 |
| 234114\* |  | 2 | 2 | 2 | - | 4.0 |
| 234129 |  | 2 | 2 | - | - | 3.0 |
| 324033 |  | 4 | - | - | - | 3.0 |
|  |  | 16 | 10 | 2 | - | 21.0 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 12 |  |  | 22.0 |

\* This course must be taken in the 1st semester.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2nd semester | | Le | E | La | P | C |
| 104032 |  | 4 | 2 | - | - | 5.0 |
| 114071 |  | 3 | 1 | - | - | 3.5 |
| 234124 |  | 2 | 2 | - | - | 4.0 |
| 234125\*\* |  | 2 | 2 | - | - | 3.0 |
| 234141 |  | 2 | 1 | - | 1 | 3.0 |
| 234493 |  | 1 | - | - | - | 1.0 |
|  |  | 14 | 8 | - | 3 | 19.5 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 10 |  |  | 20.5 |

\*\* XXXX can be taken in the 2nd semester and XXXXX in the 3rd, or vice versa.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 3rd semester | | Le | E | La | P | C |
| 094412 |  | 3 | 2 | - | - | 4.0 |
| 104134\*\*\* |  | 2 | 1 | - | - | 2.5 |
| 234218 |  | 2 | 1 | 1 | - | 3.0 |
| 044252/ 234252 |  | 4 | 2 | - | - | 5.0 |
| 234292 |  | 2 | 1 | - | - | 3.0 |
| 236491 |  | 2 | 1 | - | 1 | 3.0 |
|  |  | 15 | 8 | 1 | 1 | 20.5 |

\*\*\* Students can take XXXX (104158) and XXXX (104279) instead of XXXX and the additional math course.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4th semester | | Le | E | La | P | C |
|  | An additional math course\* |  |  |  |  | 2.5/5.0 |
|  | A scientific course\*\* |  |  |  |  | 3.0/5.0 |
| 234118 |  | 2 | 1 | 1 | - | 3.0 |
| 234123 |  | 2 | 2 | 3 | 6 | 4.5 |
| 234247 |  | 2 | 1 | - | - | 3.0 |
|  |  |  |  |  |  | 16/20.5 |

\* One of the math courses specified in the general four-year study track.

\*\* The scientific course requirements are the same as those for the general four-year study track, i.e., at least 8 credits from the courses on the scientific course list in the general four-year track, while meeting the requirements of one of the chains.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
|  | A scientific course\*\* |  |  |  |  | 3.0/5.0 |
| 236267 |  | 2 | 1 | - | 1 | 3.0 |
| 236343 |  | 2 | 1 | - | 1 | 3.0 |
| 236360 |  | 2 | 1 | - | - | 3.0 |
| 236334 |  | 2 | 1 | - | 1 | 3.0 |
| 236350 |  | 2 | 1 | - | 1 | 3.0 |
| 236496 |  | 2 | 1 | - | 1 | 3.0 |
|  |  |  |  |  |  | 21/23 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 6th semester | Le | E | La | P | C |
| 236506 | 2 | 1 | - | 1 | 3.0 |
| 236490 | 2 | 1 | - | 1 | 3.0 |
|  | 4 | 2 | - | 2 | 6.0 |

**Elective Courses**

Students are required to take 37 elective faculty credits, as follows. They must complete three different courses (at least 8 credits) from the list of core courses below and complete one specialization group from the 11 groups specified as part of the general four-year track. Completing a group means taking three different courses from the group (at least 8 credits) that are not part of the compulsory or core requirements and meeting the compulsory study requirements of the group, if there are any.

Twelve additional credits need to be chosen from List A (all computer science faculty courses) and another 9 credits from List A or List B (elective Technion courses) appearing as part of the general four-year study track.

Each student is required to participate in either at least two projects or one project and one seminar. These must include at least one of the dedicated projects: XXXX (236349) or XXXX (236499).

**Core Courses**

Students are required to take three of the following courses (at least 8 credits):

|  |  |  |
| --- | --- | --- |
|  | | Credits |
| 236501 |  | 3.0 |
| 236342 |  | 3.0 |
| 236500 |  | 3.0 |
| 236508 |  | 2.0 |
| 236990 |  | 3.0 |
| 236376 |  | 4.0 |
| 236341 |  | 3.0 |

**The Computer Science Track with a Focus on Bioinformatics**

**(In collaboration with the Faculty of Biology)**

The rapid advancements in modern biology are made possible by the increasing use of innovative computational methods and algorithms. The decoding of the human genome is revolutionizing our understanding of evolution and human biology as well as our approach to diseases and developing medications and early diagnosis methods.

This track’s goal is to qualify graduates to join and lead bioinformatics industries or continue to graduate studies in molecular and cell biology and computer science, without having to meet any further requirements.

Graduates receive the degree of B.Sc. in Computer Science and the track will be noted on a confirmation document attached to their diploma and grade sheet.

**The Curriculum**

To complete the degree, students must accumulate 155 credits according to the following specification:

|  |  |  |
| --- | --- | --- |
| Compulsory courses | 107.0 | Credits |
| Elective faculty courses | 36.0 | Credits |
| Elective Technion courses | 12.0 | Credits |

Le – lecture; E – exercise; La – lab; P – project; C – credits

**Compulsory Courses**

Recommended course sets, by semesters:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1st semester | | Le | E | La | P | C |
| 104031 |  | 4 | 3 | - | - | 5.5 |
| 104166 |  | 4 | 3 | - | - | 5.5 |
| 234114\* |  | 2 | 2 | 2 | - | 4.0 |
| 234129 |  | 2 | 2 | - | - | 3.0 |
| 134058 |  | 3 | - | - | - | 3.0 |
|  |  | 15 | 10 | 2 | - | 21.0 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 12 |  | - | 22.0 |

\* This course must be taken in the 1st semester.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2nd semester | | Le | E | La | P | C |
| 104032 |  | 4 | 2 | - | - | 5.0 |
| 114071\*\* |  | 3 | 1 | - | - | 3.5 |
| 134020 |  | 3 | 1 | - | - | 3.5 |
| 134133 |  | 2 | - | - | - | 2.0 |
| 234124 |  | 2 | 2 | - | 2 | 4.0 |
| 234141 |  | 2 | 1 | - | 1 | 3.0 |
|  |  | 16 | 7 | - | 3 | 21.0 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 9 |  |  | 22.0 |

\*\* XXXX can be deferred to later semesters.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 3rd semester | | Le | E | La | P | C |
| 094412 |  | 3 | 2 | - | - | 4.0 |
| 044252/  234252 |  | 4 | 2 | - | - | 5.0 |
| 234218 |  | 2 | 1 | 1 | - | 3.0 |
| 234292 |  | 2 | 1 | - | - | 3.0 |
| 125001\*\*\* |  | 2 | 2 | - | - | 3.0 |
| 324033 |  | 4 | - | - | - | 3.0 |
|  |  | 17 | 8 | 1 | - | 21.0 |

\*\*\* Students can take XXXX (124120) instead.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4th semester | | Le | E | La | P | C |
| 094423 |  | 3 | 1 | - | - | 3.5 |
| 234118 |  | 2 | 1 | 1 | 1 | 3.0 |
| 234247 |  | 2 | 1 | - | - | 3.0 |
| 125801 |  | 4 | 2 | - | - | 5.0 |
| 134019 |  | 2 | 2 | - | - | 2.5 |
|  |  | 13 | 7 | 1 | 1 | 17.0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
| 104134 |  | 2 | 1 | - | - | 2.5 |
| 234123 |  | 2 | 2 | 3 | 6 | 4.5 |
| 236523 |  | 2 | 1 | - | - | 2.5 |
| 134082 |  | 2 | 1 | - | - | 2.5 |
| 134142 |  | 1 | - | 5 | - | 2.5 |
| 134113 |  | 3 | 1 | - | - | 3.5 |
|  |  | 12 | 6 | 8 | 6 | 18.0 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 6th semester | Le | E | La | P | C |
| 236343 | 2 | 1 | - | 1 | 3.0 |
| 236522 | 2 | 1 | - | - | 3.0 |
|  | 4 | 2 | - | 1 | 6.0 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7th semester | Le | E | La | P | C |
| 236524 | 2 | - | - | 3 | 3.0 |
|  | 2 | - | - | 3 | 3.0 |

Please note: Students will only be admitted to the track in the winter semester.

**Elective Courses**

Students must complete 36 credits according to the following requirements:

At least 15 credits from List A (faculty courses) featured as part of the general four-year computer science study track.

At least ten elective biology credits, as specified:

At least two courses from the following list, while the other courses can be chosen from List A or B for the B.Sc. in Biology degree.

|  |  |  |
| --- | --- | --- |
|  |  | Credits |
| 134119 |  | 2.5 |
| 134128 |  | 3.5 |
| 134111 |  | 3.0 |
| 134040 |  | 3.0 |
| 134117 |  | 3.5 |
| 134121 |  | 3.0 |

The other 11 credits can be chosen from List A for computer science or Lists A or B for the B.Sc. in Biology degree.

**The General Three-Year Study Track Curriculum**

To earn their degree, students must accumulate 118.5 credits according to the following specification:

|  |  |
| --- | --- |
| Compulsory courses | 84.0 credits |
| Elective faculty courses | 24.5 credits |
| Elective Technion courses | 10.0 credits |

The division to semesters is only a recommendation.

The 1st, 2nd, 3rd, and 4th semesters are the same as in the general four-year track.

Le – lecture; E – exercise; La – lab; P – project; C – credits

**Compulsory Courses**

Recommended course sets, by semesters:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
|  | A scientific course\*\* |  |  |  |  | 3.0/5.0 |
| 236343 |  | 2 | 1 | - | 1 | 3.0 |
| 236360 |  | 2 | 1 | - | - | 3.0 |
|  |  |  |  |  |  | 9/11 |

\*\* The scientific course requirements are the same as for the general four-year study track, i.e., at least 8 credits from the courses appearing in the scientific course list in the general four-year study track, while meeting the requirements of one of the chains.

**Elective Courses**

Students are required to complete 24.5 elective faculty credits, as follows: at least 18 credits from List A (faculty courses), including at least one project. The other elective courses can be chosen from Lists A or B of the general four-year study track.

**The Learning and Analyzing Information Track**

The goal of this program is for graduates to specialize in information and signal collection, processing, and analysis; and method and algorithm research in these fields. The track focuses on the principles of handling information and generating content from it by using signal processing tools, statistical inference, and machine learning. The program provides its graduates with a broad background in computer science alongside mathematical enrichment and courses specializing in information, including how to collect it, process it, and learn from it. Graduates are awarded the degree of B.Sc. in Computer Science, and the track will be noted on a conformation document attached to their diploma and grade sheet.

Please note: Students will only be admitted to this track in the winter semester.

To complete the three-year degree track students must accumulate 120.5 credits according to the following specification:

|  |  |
| --- | --- |
| Compulsory courses | 85.5 credits |
| Core courses | 12.0 credits |
| Elective faculty courses | 13.0 credits |
| Elective Technion courses | 10.0 credits |

Le – lecture; E – exercise; La – lab; P – project; C – credits

**Compulsory Courses**

Recommended course sets, by semesters:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1st semester | | Le | E | La | P | C |
| 104031 |  | 4 | 3 | - | - | 5.5 |
| 104166 |  | 4 | 3 | - | - | 5.5 |
| 234114\* |  | 2 | 2 | 2 | - | 4.0 |
| 234129 |  | 2 | 2 | - | - | 3.0 |
| 324033 |  | 4 | - | - | - | 3.0 |
|  |  | 16 | 10 | 2 | - | 21.0 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 12 |  |  | 22.0 |

\* This course must be taken the 1st semester.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2nd semester | | Le | E | La | P | C |
| 104032 |  | 4 | 2 | 2 | - | 5.0 |
| 114071 |  | 3 | 1 | 1 | - | 3.5 |
| 234124 |  | 2 | 2 | 2 | 2 | 4.0 |
| 234141 |  | 2 | 1 | 1 | 1 | 3.0 |
| 104174 | XXXX(1) | 3 | 1 | 1 | - | 3.5 |
|  |  | 14 | 7 | 7 | 3 | 19.0 |
|  | Physical education (choose from a list) | - | 2 | 2 | - | 1.0 |
|  |  |  | 9 | 9 |  | 20.0 |

1. Or XXXX (103134) for 2.5 credits in addition to an elective faculty credit.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 3rd semester | | Le | E | La | P | C |
| 044252/  234252 |  | 4 | 2 | - | - | 5.0 |
| 094412 |  | 3 | 2 | - | - | 4.0 |
| 234125 |  | 2 | 2 | - | - | 3.0 |
| 234218 |  | 2 | 1 | 1 | - | 3.0 |
| 234292 |  | 2 | 1 | - | - | 3.0 |
|  |  | 13 | 8 | 1 | - | 18 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4th semester | | Le | E | La | P | C |
| 234247 |  | 2 | 1 | - | - | 3.0 |
| 234118 |  | 2 | 1 | 1 | - | 3.0 |
| 234123 |  | 2 | 2 | 3 | 6 | 4.5 |
| 236756 |  | 2 | 1 | 2 | - | 3.0 |
|  | A scientific course\*\* |  |  |  |  | 3.0/5.0 |
|  |  |  |  |  |  | 16.5/18.5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
| 236343 |  | 2 | 1 | - | 1 | 3.0 |
|  |  |  |  |  |  |  |
| 236201 |  | 2 | 1 | - | 1 | 3.0 |
|  | A scientific course\*\* |  |  |  |  | 3.0/5.0 |
|  |  |  |  |  |  | 9/11 |

\*\* The scientific course requirements are the same as for the general four-year study track, i.e., at least 8 credits from the courses appearing on the scientific course list for the general four-year study track, while meeting the requirements of one of the chains.

**Elective Courses**

Students must complete 25 elective faculty credits, as follows: at least four courses (at least 12 credits) from the list of core courses below.

Each student must participate in at least one faculty project (aside from those defined in the curriculum as “not recognized for the purpose of meeting the project requirements for the degree”). The other elective courses can be chosen from List A (faculty courses) appearing as part of the general four-year study track.

**Core Courses**

Students are required to take at least four courses from the following list (at least 12 credits):

|  |  |  |
| --- | --- | --- |
|  | | Credits |
| 094423 |  | 3.5 |
| 236330 |  | 3.0 |
|  | Or |  |
| 046197 |  | 3.0 |
| 236299 |  | 3.0 |
| 236363 |  | 3.0 |
| 236370 |  | 3.0 |
| 236501 |  | 3.0 |
| 236667 |  | 3.0 |
| 236860 |  | 3.0 |
| 236777 |  | 3.0 |
| 236781 |  | 3.0 |
| 236901 |  | 3.0 |

**The Software Engineering Track**

The goal of this track is to train its graduates to specialize in large software systems. The track focuses on a range of programing methods and systematic handling of software analysis, content, application, testing, verification, maintenance, assessment, and conversion actions. The track provides graduates with extensive knowledge of applied computer science and in-depth practical experience in creating software and using advanced software engineering tools. Graduates receive the degree of B.Sc. in Software Engineering. This track is open to any student in the faculty whose academic record is intact.

**The Curriculum**

To earn their degree, students must accumulate 159.5 credits, according to the following specification:

|  |  |
| --- | --- |
| Compulsory courses | 109 credits |
| Core courses | 9.0 credits |
| Elective faculty courses | 29.5 credits |
| Elective Technion courses | 12.0 credits |

Le – lecture; E – exercise; La – lab; P – project; C – credits

**Compulsory Courses**

Recommended course sets, by semesters:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1st semester | | Le | E | La | P | C |
| 104031 |  | 4 | 3 | - | - | 5.5 |
| 104166 |  | 4 | 3 | - | - | 5.5 |
| 234114\* |  | 2 | 2 | 2 | - | 4.0 |
| 234129 |  | 2 | 2 | - | - | 3.0 |
| 324033 |  | 4 | - | - | - | 3.0 |
|  |  | 16 | 10 | 2 | - | 21.0 |
|  | Physical educations (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 12 |  |  | 22.0 |

\* This course must be taken in the 1st semester.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2nd semester | | Le | E | La | P | C |
| 104032 |  | 4 | 2 | - | - | 5.0 |
| 104134 |  | 2 | 1 | - | - | 2.5 |
| 114071 |  | 3 | 1 | - | - | 3.5 |
| 234124 |  | 2 | 2 | - | 2 | 4.0 |
| 234141 |  | 2 | 1 | - | 1 | 3.0 |
|  |  | 13 | 7 | - | 3 | 18.0 |
|  | Physical educations (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 9 |  |  | 19.0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 3rd semester | | Le | E | La | P | C |
| 044252/  234252 |  | 4 | 2 | - | - | 5.0 |
|  | A scientific course\*\* |  |  |  |  | 3.0/5.0 |
| 094412 |  | 3 | 2 | - | - | 4.0 |
| 234218 |  | 2 | 1 | 1 | - | 3.0 |
| 234292 |  | 2 | 1 | - | - | 3.0 |
| 236319 |  | 2 | 1 | - | - | 3.0 |
|  |  |  |  |  |  | 21/23.0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4th semester | | Le | E | La | P | C |
|  | A scientific course\*\* |  |  |  |  | 3.0/5.0 |
| 234118 |  | 2 | 1 | 1 | - | 3.0 |
| 234247 |  | 2 | 1 | - | - | 3.0 |
| 234123 |  | 2 | 2 | 3 | 6 | 4.5 |
| 236703 |  | 2 | 2 | - | - | 3.0 |
|  |  |  |  |  |  | 16.5/18.5 |

\*\* Scientific course requirements are the same as those for the general four-year study track: at least 8 credits from the courses appearing in the scientific course list in the general four-year track, while meeting the requirements of one of the chains.

For students who begin their studies in the winter semester:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
| 236267 |  | 2 | 1 | - | 1 | 3.0 |
| 236322 |  | 2 | 1 | - | 1 | 3.0 |
| 236342 |  | 2 | 1 | - | 1 | 3.0 |
| 236343 |  | 2 | 1 | - | 1 | 3.0 |
| 236360 |  | 2 | 1 | - | - | 3.0 |
| 236370 |  | 2 | 1 | - | 1 | 3.0 |
|  |  | 12 | 6 | - | 5 | 18.0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 6th semester | | Le | E | La | P | C |
| 234125 |  | 2 | 2 | - | - | 3.0 |
| 236334 |  | 2 | 1 | - | 1 | 3.0 |
|  |  | 4 | 3 | - | 1 | 6.0 |

We recommend taking at least one project in the 6th semester.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 7th semester | | Le | E | La | P | C |
| 234311 |  | 2 | - | - | 4 | 3.0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 8th semester | | Le | E | La | P | C |
| 234312 |  | 2 | - | - | 6 | 3.5 |

For students who begin their studies in the spring semester:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
| 236267 |  | 2 | 1 | - | 1 | 3.0 |
| 234125 |  | 2 | 2 | - | - | 3.0 |
| 236334 |  | 2 | 1 | - | 1 | 3.0 |
| 236343 |  | 2 | 1 | - | 1 | 3.0 |
| 236360 |  | 2 | 1 | - | - | 3.0 |
|  |  | 102 | 6 | - | 3 | .015 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 6th semester | | Le | E | La | P | C |
| 236322 |  | 2 | 1 | - | 1 | 3.0 |
| 236342 |  | 2 | 1 | - | 1 | 3.0 |
| 234311 |  | 2 | - | - | 4 | 3.0 |
| 236370 |  | 2 | 1 | - | 1 | 3.0 |
|  |  | 8 | 3 | - | 7 | 0.12 |

We recommend taking a project in the 6th semester.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 7th semester | | Le | E | La | P | C |
| 234321 |  | 2 | - | - | 6 | 3.5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 8th semester | | Le | E | La | P | C |
|  |  |  |  |  |  |  |

Elective courses

**Elective Courses**

Students must complete 38.5 elective faculty credits, from which at least three (9.0 credits) are from the list of core courses specified below. 29.5 of the elective faculty credits must include at least 15 courses from List A (faculty courses), including at least one project. The other elective courses can be taken from Lists A or B (appearing under the general four-year study track section) or as approved by the advisor.

Please note: Students can choose to take XXXX (094503) as an elective course from List B in the software engineering study track.

**Core Courses**

Students are required to take three of the following courses:

|  |  |  |
| --- | --- | --- |
|  | | Credits |
| 236270 |  | 3.0 |
| 236321 |  | 3.0 |
| 236347 |  | 3.0 |
| 236350 |  | 3.0 |
| 236363 |  | 3.0 |
| 236368 |  | 3.0 |
| 236501 |  | 3.0 |
| 236700 |  | 3.0 |

**The Excellence Track for Advanced Software Engineering**

The track’s goal is to produce highly skilled software engineers by helping them to acquire scientific-technological knowledge in a broad range of software engineering fields and offering them enriched foundational scientific and design courses.

The track is intended for outstanding students, specifically outstanding academic reserve students participating in the Psagot program. The program allows participants to complete their undergraduate studies in software engineering and take master’s courses toward earning an M.Sc. degree.

To complete these studies students must meet all the requirements of the software engineering track and complete an additional 14 credits based on the requirements for a master’s degree.

Some clarifications:

1. Only students with exceptionally high admission scores (occasionally re-determined) will be admitted to the track in the first semester. Admission to the track guarantees admission to the software engineering track.
2. Students may be admitted to the track at any time throughout their computer science studies. However, admission will only be approved for students with a cumulative GPA of 90 and above, not including elective courses.
3. Students must maintain a GPA of at least 85 throughout their entire studies to continue studying in the track.
4. We recommend taking an additional scientific course or XXXX in the 4th semester.
5. We recommend students take elective faculty courses beginning from the 5th semester and advanced courses during the 7th and 8th semesters.
6. We recommend taking most of the core courses of the software engineering track as elective faculty courses.
7. Students whose research proposal for a master’s degree has been approved will only need 12 credits (instead of 14) to complete their track studies. These students will be required to complete an additional 6 credits later on in their master’s studies.
8. The additional 14 credits will only be recognized for a master’s degree if approved in advance by the vice dean of the Technion’s Graduate School before the track studies begin (and the minimum score requirement is met).
9. Students who meet the admission requirements for a master’s degree will be able to register for a master’s degree at the end of their third year of studies.
10. Graduates of the program can specialize in any topic researched at the faculty during their master’s studies.
11. Only students who have been admitted to the track and completed their studies within five years will be recognized as track graduates.
12. Graduates will be awarded a track graduate certificate by the faculty.

**The Computer Engineering Track**

The track’s goal is to provide a framework for undergraduate studies and produce graduate computer engineers with extensive software and hardware knowledge, specializing in designing and building electronic systems (including computers).

The computer engineering track operates as part of a collaboration between the Faculty of Electrical and Computer Engineering and the Faculty of Computer Science, henceforth referred to as the “parent units.” The track is under the complete authority of these two units; it is not an academic unit itself, but run by the heads of both parent units and the curriculum is based on courses from both. At the end of their studies, graduates receive the degree of B.Sc. in Computer Engineering.

To fulfill the requirements for receiving a degree, students must accumulate at least158.5 credits from the following four course groups: compulsory courses, core courses, elective courses, and Technion elective courses, in the following manner:

1. All compulsory courses specified in the recommended plan below must be taken, constituting 109–111 credits.
2. At least three courses from the list of core courses must be taken.
3. Several courses from the lists of elective courses in the Faculty of Computer Science and Faculty of Electrical and Computer Engineering must be taken to complete at least two specialization groups. If a course that appears on the list of core courses and is also compulsory for a specialization group, it can either be considered part of the specialization group (and then will not be considered as a core course) or as a core course (and then will not be considered part of the specialization group and another course will have to be chosen instead). At least 146.5 credits in total must be accumulated from compulsory, core, and elective courses (see also the section on elective courses below).
4. 12 credits from elective Technion courses must be taken, comprised from at least 6 credits from enrichment courses, 2 credits from PE courses, and elective Technion courses, subject to the enrollment rules of each course.

Students can change their minds and ask to leave the track at any time. However, in order to receive a degree in computer science or electrical engineering, they must complete all the missing compulsory courses and meet all the academic requirements for a degree in the parent unit.

Students interested in obtaining a high school teaching certificate should contact the undergraduate studies secretariat of the parent unit for details.

**Admission**

1. A limited number of students from the Faculty of Electrical and Computer Engineering and the Faculty of Computer Science are admitted to the track. The number of students admitted from each unit is determined jointly by the heads of both parent units after consulting with each other at the computer engineering track committee.
2. Students admitted to the track still belong to their parent units and all matters regarding academic performance, administration, and discipline are under the authority of the head of their unit.
3. Students who complete their studies in the computer engineering track can advance to graduate studies in either of the parent units, without any special completion requirements, provided this is congruent with the Technion’s Graduate School Regulations.
4. Student advisors: The parent unit appoints special advisors to students in the computer engineering track. Students admitted to the track are referred to the appropriate advisor in their unit.

**The Curriculum**

To complete the degree, students are required accumulate 158.5 credits according to the following specification:

|  |  |
| --- | --- |
| Compulsory courses | 109–111 credits |
| Core courses | 9.0 credits |
| Elective faculty courses | 26.5–28.5 credits |
| Elective Technion courses | 12.0 credits |

Le – lecture; E – exercise; La – lab; P – project; C – credits

**Compulsory Courses**

Recommended course sets, by semesters:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1st semester | | Le | E | La | P | C |
| 044102 |  | 4\*\*\* | - | - | - | - |
| 104031 |  | 4 | 3 | - | - | 5.5 |
| 104166\* |  | 4 | 3 | - | - | 5.5 |
| 234114\*\* |  | 2 | 2 | 2 | - | 4.0 |
| 324033 |  | 4 | - | - | - | 3.0 |
|  |  | 14 | 8 | - | - | 18.0 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 10 |  |  | 19.0 |

\* Electrical and computer engineering students will take XXXX 104016.

\*\* Electrical and computer engineering students will take XXXX 234117.

\*\*\* Once during the semester, according to instructions that will be published separately.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2nd semester | | Le | E | La | P | C |
| 104032 |  | 4 | 2 | - | - | 5.0 |
| 104134 |  | 2 | 1 | - | - | 2.5 |
| 114071 |  | 3 | 1 | - | - | 3.5 |
| 234124 |  | 2 | 2 | - | 2 | 4.0 |
| 234141 |  | 2 | 1 | - | 1 | 3.0 |
|  |  | 13 | 7 | - | 3 | 18.0 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 9 |  |  | 19.0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 3rd semester | | Le | E | La | P | C |
| 044252/  234252 |  | 4 | 2 | - | - | 5.0 |
| 114075 |  | 4 | 2 | - | - | 5.0 |
| 094412\* |  | 3 | 2 | - | - | 4.0 |
| 104285\*\* |  | 3 | 1 | - | - | 3.5 |
| 104033 | XXXX (1) | 2 | 1 | - | - | 2.5 |
| 234218 |  | 2 | 1 | 1 | - | 3.0 |
|  |  | 18 | 9 | 1 | - | 23.0 |

\* Electrical and computer engineering students will take XXXX 104034 in the 4th semester.

(1) Instead of the three courses, XXXX, 104032 XXXX 104285, and XXXX 104033, electrical and computer engineering students will take XXXX 104013 and XXXX 104035 in the 2nd semester.

\*\* Computer science students can take XXXX (104135) for 2.5 credits and add another credit from an elective faculty course instead of XXXX (104285).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4th semester | | Le | E | La | P | C |
| 044105 |  | 3 | 2 | - | - | 4.0 |
| 104214 |  | 2 | 1 | - | - | 2.5 |
| 104215 |  | 2 | 1 | - | - | 2.5 |
| 234118 |  | 2 | 1 | 1 | - | 3.0 |
| 234247 |  | 2 | 1 | - | - | 3.0 |
| 044127 |  | 3 | 1 | - | - | 3.5 |
|  |  | 14 | 9 | 1 | - | 18.5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
| 044131 |  | 4 | 2 | - | - | 5.0 |
| 044157 |  | - | - | 3 | 3 | 2.0 |
| 234123 |  | 2 | 2 | 3 | 6 | 4.5 |
|  | Or |  |  |  |  |  |
| 046209 |  | 2 | 2 | - | - | 3.5 |
|  | And |  |  |  |  |  |
| 046210 |  | - | - | 4 | - | 1.0 |
| 104220 |  | 2 | 1 | - | - | 2.5 |
| 236267 |  | 2 | 1 | - | 1 | 3.0 |
|  |  | 10 | 6 | 6/7 | 3/9 | 17.0 |

⸷ Students can choose between XXXX 234123 and XXXX 046209 + XXXX 046210.

\* Electrical and computer engineering students can take XXXX 046267.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 6th semester | | Le | E | La | P | C |
| 044137 |  | 4 | 2 | - | - | 5.0 |
| 114073 |  | 3 | 1 | - | - | 3.5 |
| 044167 |  | 2 | - | 4 | - | 4.0 |
|  | Or |  |  |  |  |  |
|  | A computer science project\* |  |  |  |  | 3.0/4.0 |
|  |  |  |  |  |  | 11.5/12.5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 7th semester | | Le | E | La | P | C |
| 044169 |  | - | - | 4 | - | 4.0 |
|  | Or |  |  |  |  |  |
|  | A computer science project\* |  |  |  |  | 3.0/ 4.0 |
|  |  |  |  |  |  | 3/4 |

\* All project courses at the Faculty of Computer Science (aside from those defined in the syllabus as “not recognized for the purpose of fulfilling the project requirements for a degree”).

**Core Courses**

Students are required to choose three courses from the following list:

|  |  |  |
| --- | --- | --- |
|  | | Credits |
| 044198 |  | 3.0 |
| 044202 |  | 3.0 |
| 236334 |  | 3.0 |
|  | Or |  |
| 044334 |  | 3.0 |
| 234129 |  | 3.0 |
| 234292 |  | 3.0 |
| 236343 |  | 3.0 |

A course will not be considered both a core course and a specialization course in regard to accumulating the required number of credits.

**Elective Courses**

**Specialization groups:**

The recommended elective courses have been classified into ten specialization groups. Each student is required to complete at least two different groups. Completing a group means taking the courses that are compulsory for the group and a minimum of three additional courses from the list. Two groups will be considered different if they include at least six different courses. The other elective courses can be chosen from all the courses offered by the Faculty of Electrical and Computer Engineering and the Faculty of Computer Science.

1. Computer networks, distributed systems, and computer structures

|  |  |
| --- | --- |
| 044334\* |  |
|  | Or |
| 236334\* |  |
| 046005\* |  |
|  | Or |
| 236341 |  |
| 236357 |  |
| 046237 |  |
| 236351 |  |
| 046272 |  |
| 046273 |  |
| 236322 |  |
| 236370 |  |
| 236376 |  |
| 236490 |  |
| 236491 |  |
| 236496 |  |
| 236350 |  |
| 046853 |  |
| 046268 |  |
|  | Or |
| 236268 |  |
| 046275 |  |
| 046278/  236278 |  |
| 046265 |  |
| 046279 |  |
| 046280 |  |

044334 / 236334 or 236357 are compulsory.

\* Students who take 044334 can only take 046005; students who take 236334 can only take 236341.

1. Communication theory

|  |  |
| --- | --- |
| 044334\* |  |
|  | Or |
| 236334\* |  |
| 046005\* |  |
|  | Or |
| 236341 |  |
| 044202 |  |
| 046204 |  |
| 046206 |  |
| 046208 |  |
| 044148 |  |
| 044198 |  |
| 046201 |  |
| 046205 |  |
| 046868 |  |
| 046743 |  |
| 046733 |  |
| 236309 |  |
| 236525 |  |
| 236520 |  |

044202 and either 046206 or 046204 are compulsory.

\* Students who take 044334 can only take 046005; students who take 236334 can only take 236341

1. Algorithms, cyphers, cryptography, and complexity

|  |  |
| --- | --- |
| 046205 |  |
| 234129 |  |
| 236309 |  |
| 236313 |  |
| 236343 |  |
| 236359 |  |
| 236374 |  |
| 236500 |  |
| 236506 |  |
|  |  |
|  |  |
| 236525 |  |
| 236520 |  |
| 236522 |  |
| 236719 |  |
| 236760 |  |
| 236990 |  |

236343 is compulsory.

1. Signal and image processing

|  |  |
| --- | --- |
| 044198 |  |
| 044202 |  |
| 046200 |  |
|  | Or |
| 236860 |  |
| 046345 |  |
|  | Or |
| 236216 |  |
| 046197 |  |
|  | Or |
| 104193 |  |
|  | Or |
| 236330 |  |
| 046201 |  |
| 046332 |  |
| 046745 |  |
| 046746 |  |
|  | Or |
| 236873 |  |
| 236373 |  |
|  |  |
| 236861 |  |
| 046733 |  |
| 046831 |  |
| 046195 |  |
| 234125 |  |
| 236329 |  |
| 236862 |  |

044198 and either 044202, 046200, or 236860 are compulsory.

1. Intelligent systems

|  |  |
| --- | --- |
| 046345 |  |
|  | Or |
| 236216 |  |
| 236501 |  |
| 236901 |  |
| 236927 |  |
|  | Or |
| 046212 |  |
| 234292 |  |
| 236372 |  |
| 236373 |  |
| 236716 |  |
| 236756 |  |
| 236760 |  |
| 236781 |  |
|  | Or |
| 046211 |  |
| 046203 |  |
| 236329 |  |
| 236861 |  |
| 236873 |  |
|  | Or |
| 046746 |  |
| 046853 |  |
| 236941 |  |
| 046200 |  |
|  | Or |
| 236860 |  |
| 236862 |  |

046345 / 236216 or 236501 or 236972 / 046212 are compulsory.

1. Integrated electronic circuits

|  |  |
| --- | --- |
| 044139 |  |
| 044231 |  |
| 046235 |  |
| 046237 |  |
| 046903 |  |
| 046265 |  |
| 046129 |  |
| 044140 |  |
| 044148 |  |
| 046187 |  |
| 046189 |  |
| 046773 |  |
| 046851 |  |
| 046880 |  |

044231 and 046237 are compulsory.

1. Software systems and advanced programming

|  |  |
| --- | --- |
| 236319 |  |
| 236322 |  |
| 236321 |  |
| 236490 |  |
| 236491 |  |
| 236496 |  |
| 236350 |  |
| 046266 |  |
|  | Or |
| 236360 |  |
| 236363 |  |
| 236370 |  |
| 236376 |  |
| 236703 |  |
|  | Or |
| 046271 |  |
| 236351 |  |
| 236501 |  |
| 236700 |  |
| 236780 |  |
| 236781 |  |
| 046272 |  |
| 046273 |  |
| 046275 |  |
| 046277 |  |
| 046278 |  |
|  | Or |
| 236278 |  |
| 046279 |  |
| 046280 |  |

1. Control and robotics

|  |  |
| --- | --- |
| 044139 |  |
| 044191 |  |
| 046192 |  |
| 044193 |  |
| 046203 |  |
| 044198 |  |
| 044202 |  |
| 046042 |  |
| 046189 |  |
| 046196 |  |
| 046197 |  |
|  | Or |
| 236330 |  |
|  | Or |
| 104193 |  |
| 236756 |  |
| 236901 |  |
| 236927 |  |
|  | Or |
| 046212 |  |

044191 is compulsory.

1. Programming languages, formal and natural languages

|  |  |
| --- | --- |
| 234129 |  |
| 234292 |  |
| 236319 |  |
| 236299 |  |
| 236342 |  |
| 236345 |  |
| 046277 |  |
| 046266 |  |
|  | Or |
| 236360 |  |
| 236368 |  |
| 236780 |  |

234129 is compulsory.

1. Quantum technologies

Please note: XXXX (114073) is a prerequisite for the group so we recommend taking it as early as possible.

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

046243 and either 236990 or 116031 are compulsory.

**The B.Sc. Program in Computer Science and Mathematics**

**(In collaboration with the Faculty of Mathematics)**

The Faculties of Computer Science and Mathematics offer a combined program intend for students with particularly high admission scores.

Graduates receive the degree of B.Sc. in Computer Science and Mathematics.

**Admission**

1. The program is intended for outstanding students that at the very least meet the admission requirements of each of the faculties.
2. Students can choose to belong to either of the faculties; whichever faculty they choose will be considered their “parent unit.”
3. The criteria for a student to transfer to the track based on academic achievements will be uniform and not dependent on the parent unit to which the student is transferring (computer science or mathematics).
4. Each student in the track whose academic record is intact is guaranteed the option to switch to any other study track at either of the two faculties.

To complete the requirements for a degree, students must accumulate 152.0 credits, according to the following specification:

|  |  |
| --- | --- |
| Compulsory courses | 107.5–109.5 credits |
| Elective faculty courses | 32.5–34.5 credits |
| Elective Technion courses | 10.0 credits |

Le – lecture; E – exercise; La – lab; P – project; C – credits

**Compulsory Courses**

Recommended course sets, by semesters:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1st semester | | Le | E | La | P | C |
| 104195 |  | 4 | 3 | - | - | 5.5 |
| 104066 |  | 4 | 3 | - | - | 5.5 |
| 234114 |  | 2 | 2 | 2 | - | 4.0 |
| 234129 |  | 2 | 2 | - | - | 3.0 |
| 324033 |  | 4 | - | - | - | 3.0 |
|  |  | 16 | 10 | 2 | - | 21.0 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 12 |  |  | 22.0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2nd semester | | Le | E | La | P | C |
| 104281 |  | 4 | 2 | - | - | 5.0 |
| 104168 |  | 4 | 2 | - | - | 5.0 |
| 234124 |  | 2 | 2 | - | 2 | 4.0 |
| 234141 |  | 2 | 1 | - | 1 | 3.0 |
| 114071 |  | 3 | 1 | - | - | 3.5 |
|  |  | 15 | 8 | - | 3 | 20.5 |
|  | Physical education (choose from a list) | - | 2 | - | - | 1.0 |
|  |  |  | 10 |  |  | 21.5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 3rd semester | | Le | E | La | P | C |
| 104295 |  | 4 | 2 | - | - | 5.0 |
| 104293 |  | 2 | 1 | - | - | 2.5 |
| 104222 |  | 3 | 1 | - | - | 3.5 |
| 234218 |  | 2 | 1 | 1 | - | 3.0 |
| 044252/ 234252 |  | 4 | 2 | - | - | 5.0 |
|  |  | 15 | 7 | 1 | - | 19.0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4th semester | | Le | E | La | P | C |
| 104142 |  | 3 | 1 | - | - | 3.5 |
| 104285 |  | 3 | 1 | - | - | 3.5 |
| 104158 |  | 3 | 1 | - | - | 3.5 |
| 234118 |  | 2 | 1 | 1 | - | 3.0 |
| 234247 |  | 2 | 1 | - | - | 3.0 |
|  |  | 13 | 5 | 1 | - | 16.5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
| 104122 |  | 3 | 1 | - | - | 3.5 |
| 104279 |  | 2 | 1 | - | - | 2.5 |
| 104294 |  | 4 | 2 | - | - | 5.0 |
| Or |  |  |  |  |  |  |
| 234125 |  | 2 | 2 | - | - | 3.0 |
| 236343 |  | 2 | 1 | - | 1 | 3.0 |
|  | A scientific course\*\* |  |  |  |  | 5.0 |
|  |  |  |  |  | 17/  19 |  |

\*\* Students are required to choose one or two scientific courses to complete one of the following chains. If more than five of these credits are chosen, they will be considered elective faculty credits.

1. The physics chain

Credits

|  |  |  |
| --- | --- | --- |
| 114075 |  | 5.0 |
|  | Or the two following courses |  |
| 114052 |  | 3.5 |
| 114054 |  | 3.5 |

1. The biology chain

Credits

|  |  |  |
| --- | --- | --- |
| 134058 |  | 3.0 |
| 134020\* |  | 3.5 |

\* XXXX is open for enrollment only once a year.

1. The chemistry chain

Credits

|  |  |  |
| --- | --- | --- |
| 124120 |  | 5.0 |
| 125801 |  | 5.0 |
| Or |  |  |
| 124510 |  | 4.0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 6th semester | | Le | E | La | P | C |
| 104192 |  | 3 | - | - | - | 3.0 |
| 106156 |  | 3 | - | - | - | 3.0 |
| 234123 |  | 2 | 2 | 3 | 6 | 4.5 |
| 236360 |  | 2 | 1 | - | - | 3.0 |
|  |  | 10 | 3 | 3 | 6 | 13.5 |

7th semester: Elective courses

**Elective Courses**

Students can choose from a list of all the compulsory and elective courses offered by the Faculty of Mathematics or the Faculty of Computer Science that are not compulsory as part of the track or identical to those courses. Elective courses must include at least one seminar from the Faculty of Mathematics and one project from the Faculty of Computer Science. In any event, students must accumulate at least 14 credits from each faculty.

**The B.Sc. Program in Computer Science and Mathematics**

**(In collaboration with the Faculty of Mathematics)**

The Faculties of Computer Science and Physics offer a combined program intend for students with particularly high admission scores.

Graduates receive the degree of B.Sc. in Computer Science and Physics.

**Admission**

1. The program is intended for a limited number of outstanding students that at the very least meet the admission requirements of each of the faculties.
2. Students will only be admitted to the track in the 1st semester.
3. Students can choose to belong to either of the faculties; whichever faculty they choose will be considered their “parent unit.”
4. The criteria for a student to transfer to the track based on academic achievements will be uniform and not dependent on the parent unit to which the student is transferring (computer science or physics).
5. Each student in the track whose academic record is intact is guaranteed the option of switching to any other study track at either of the two faculties.

To complete the requirements for a degree, students must accumulate 163.5 credits, according to the following specification:

|  |  |
| --- | --- |
| Compulsory courses | 127.5 credits |
| Elective faculty courses | 26.0 credits |
| Elective Technion courses | 10.0 credits |

Le – lecture; E – exercise; La – lab; P – project; C – credits

**Compulsory Courses**

Recommended course sets, by semesters:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1st semester | | Le | E | La | P | C |
| 044102\* |  | 4\* | - | - | - | - |
| 104031 |  | 4 | 3 | - | - | 5.5 |
| 104166 |  | 4 | 3 | - | - | 5.5 |
| 234114 |  | 2 | 2 | 2 | - | 4.0 |
| 234129 |  | 2 | 2 | - | - | 3.0 |
| 324033 |  | 4 | - | - | - | 3.0 |
|  |  | 16 | 10 | 2 | - | 21.0 |
|  | Physical education (choose from a list). | - | 2 | - | - | 1.0 |
|  |  |  | 12 |  |  | 22.0 |

\* Once during the semester, according to instructions that will be published separately.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2nd semester | | Le | E | La | P | C |
| 044252/  234252 |  | 4 | 2 | - | - | 5.0 |
| 104032 |  | 4 | 2 | - | - | 5.0 |
| 234124 |  | 2 | 2 | - | 2 | 4.0 |
| 234141 |  | 2 | 1 | - | 1 | 3.0 |
|  |  | 12 | 7 | - | 3 | 17.0 |
|  | Physical education (choose from a list). | - | 2 | - | - | 1.0 |
|  |  |  | 9 |  |  | 18.0 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 3rd semester | | Le | E | La | P | C |
| 094412 |  | 3 | 2 | - | - | 4.0 |
| 104134 |  | 2 | 1 | - | - | 2.5 |
| 104033 |  | 2 | 1 |  |  | 2.5 |
| 114020 |  | - | - | 3 | - | 1.5 |
| 114074 |  | 4 | 2 | - | - | 5.0 |
| 234218 |  | 2 | 1 | 1 | - | 3.0 |
| 234292 |  | 2 | 1 | - | - | 3.0 |
|  |  | 15 | 8 | 4 | - | 21.5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4th semester | | Le | E | La | P | C |
| 104285 |  | 3 | 1 | - | - | 3.5 |
| 114021 |  | - | - | 3 | - | 1.5 |
| 114076 |  | 4 | 2 | - | - | 5.0 |
| 234118 |  | 2 | 1 | 1 | - | 3.0 |
| 234123 |  | 2 | 2 | 3 | 6 | 4.5 |
| 234247 |  | 2 | 1 | - | - | 3.0 |
|  |  | 13 | 7 | 7 | 6 | 20.5 |

\* Students can take XXXX (104135) for 2.5 credits and add another credit from an elective course at one of the faculties instead of this course.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
| 104214 |  | 2 | 1 | - | - | 2.5 |
| 104220 |  | 2 | 1 | - | - | 2.5 |
| 104215 |  | 2 | 1 | - | - | 2.5 |
| 114101 |  | 3 | 2 | - | - | 4.0 |
| 114086 |  | 3 | 1 | - | - | 3.5 |
|  |  |  | 6 |  | - | 15.0 |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 6th semester | | Le | E | La | P | C |
| 114035 |  | - | - | 3 | - | 1.5 |
| 115203 |  | 4 | 2 | - | - | 5.0 |
| 114246 |  | 4 | 2 | - | - | 5.0 |
| 114036 |  | 4 | 2 | - | - | 5.0 |
|  |  | 12 | 6 | 3 | - | 16.5 |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 7th semester | | Le | E | La | P | C |
| 234125 |  | 2 | 2 | - | - | 3.0 |
| 115204 |  | 4 | 2 | - | - | 5.0 |
| 236343 |  | 2 | 1 | - | 1 | 3.0 |
| 124108 |  | 3 | 1 | - | - | 3.5 |
|  |  | 11 | 6 | - | 1 | 14.5 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 8th semester | | Le | E | La | P | C |
| 114037 |  | - | - | 3 | - | 1.5 |
| Elective courses | |  |  |  |  |  |

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**Elective Courses**

Students must choose at least 10 physics credits and 10 computer science credits. The 10 computer science credits must include at least one project. The 10 physics credits must include at least 9 credits from the XXXX list below.

Students who take XXXX (104135) for 2.5 credits instead of XXXX for 3.5 credits must complete an additional credit (for a total of 27 elective credits).

XXXX (236267) is compulsory for students seeking to advance to master’s studies in computer science.

236990, 116031, and 236823 that deal with quantum information will be considered elective physics or mathematics courses, according to the student’s choice.

The remaining elective courses (for 6 credits) can be chosen from the list of elective computer science and physics courses.

With the approval of the advisor, up to 6 elective credits can be chosen from List B for computer science, or in special cases, courses that do not appear on the regular lists.

The XXXX list Credits

|  |  |  |
| --- | --- | --- |
| 114210 |  | 3.5 |
| 116029 |  | 3.5 |
| 116027 |  | 3.5 |
| 116031 |  | 3.5 |
| Or |  |  |
| 236990 |  | 3.0 |
| 116354 |  | 3.5 |
| 116004 |  | 3.5 |
| 114250 |  | 3.0 |
| Or |  |  |
| 114252 |  | 3.0 |
| 116217 |  | 3.5 |

**The Dual Degree in Medicine and Computer Science Program**

The Faculty of Medicine and the Faculty of Computer Science offer a dual degree track intended for outstanding students with particularly high admission scores. The track’s goal is to train its graduates to have extensive knowledge of both computer science and medicine, so they will be able to join and become leaders in each of the separate fields as well as in research, development, and industry fields that require in-depth knowledge of both.

The program is intended for students who are admitted to medicine studies and wish to do an additional degree in computer science.

Graduates of this unique program are awarded the degrees of B.Sc. in Computer Science and B.Sc. in Medical Sciences. Graduates can earn an M.D. degree after completing all the requirements of the dual degree program in addition to three years of clinical training and one year of internship (see the Faculty of Medicine’s academic regulations regarding clinical training).

**About the Program**

In the first two years, students learn primary and other computer science courses. In the 5th and 6th semesters courses from the Faculty of Medicine will be incorporated in the curriculum alongside computer science courses, and from the 7th to the 10th semesters only medical courses will be studied.

Students participating in the program are required to take the following scientific courses: XXXX (114249) and XXXX (124120) in the 4th and 5th semesters, respectively. Students are not given a choice regarding the scientific courses, as these courses are a compulsory part of the medical curriculum.

The joint program is completed over five years, at the end of which students will have completed their computer science and medical sciences studies.

Transferring to the clinical division will only be possible after meeting all the requirements of the dual degree program, based on the academic regulations of the Faculty of Medicine.

All allowances made as part of the program are relevant to those who complete both degrees. To complete only one degree, students must fulfill all the requirements of that degree.

**The Curriculum**

To complete a degree in computer science and para-clinical medical studies, students must accumulate 218.5 credits according to the following specification:

|  |  |
| --- | --- |
| Compulsory courses | 205.0 credits |
| Elective engineering courses (\*) | 8.5 credits |
| Elective medical courses | - |
| Advanced technical English B\*\* | 3.0 credits |
| Elective Technion courses: physical education | 2.0 |

\* Elective engineering courses 236201, 236501, and 236523 are an inherent part of the program

\*\* This course must be completed by the 4th semester.

The 1st, 2nd, and 3rd semesters include only computer science courses, the same as in the general four-year track.

Le – lecture; E – exercise; La – lab; P – project; C – credits

**Compulsory Courses**

Recommended course sets, by semesters:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4th semester | | Le | E | La | P | C |
|  | Only computer science courses |  |  |  |  |  |
|  | An additional math course\* |  |  |  |  | 2.5/5.0 |
| 114249 |  | 3 | 1 | - | - | 3.5 |
| 234118 |  | 2 | 1 | 1 | - | 3.0 |
| 234123 |  | 2 | 2 | 3 | 6 | 4.5 |
| 234247 |  | 2 | 1 | - | - | 3.0 |
| 236201 |  | 2 | 1 | - | 1 | 3.0 |
|  |  |  |  |  |  | 19.5/22 |

\* One of the courses specified for the 4th semester in the general four-year track.

\*\* A scientific course – not subject to choice.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5th semester | | Le | E | La | P | C |
|  | In computer science |  |  |  |  |  |
| 124120 |  | 4 | 2 | - | - | 5.0 |
| 236343 |  | 2 | 1 | - | 1 | 3.0 |
| 236360 |  | 2 | 1 | - | - | 3.0 |
| 236501 |  | 2 | 1 | - | - | 3.0 |
| 236523 |  | 2 | 1 | - | - | 2.5 |
|  | In medicine |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 274167 |  | 3 | 1 | - | - | 3.5 |
| 274142\*\*\* |  | - | - | 6 | - | 2.0 |
|  |  |  |  |  |  | 22.0 |

\* A scientific course – not subject to choice.

\*\*

\*\*\* A third clinical course (1) will be given as a concentrated course during the summer if it cannot be integrated in the curriculum.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 6th semester | | Le | E | La | P | C |
|  | In computer science |  |  |  |  |  |
| 236503\* |  | - | - | - | 7 | 3.0 |
|  | In medicine |  |  |  |  |  |
| 125802 |  | 4 | 2 | - | - | 5.0 |
| 274143\*\* |  | - | - | 6 | - | 2.0 |
| 274165\*\*\* |  | 3 | 1 | - | - | 3.5 |
|  |  |  |  | - | - |  |
| 274182 |  | 2 | 2 | - | - | 3.0 |
|  |  |  |  |  |  | 16.5 |

\* With the approval of the head of the track, students can also take a different project from those offered by the Faculty of Computer Science.

\*\* The third clinical course (2) will be given as a concentrated course during the summer if it cannot be incorporated as part of the curriculum.

\*\*\* A scientific course – not subject to choice.

The 7th to 10th semesters consist of medical courses alone, as specified for this track in the Faculty of Medicine’s catalogue.

**The Secondary Specialization in Quantum Computation Study Track**

The field of quantum computers and quantum information (including quantum communication and cyphers) is rapidly evolving in Israel and around the globe. The Faculty of Computer Science, in coordination with the Technion’s Helen Diller Quantum Center, offers a scientific enrichment program that focuses on this field. The program provides students with a multidisciplinary perspective on this evolving subject.

The study track is open to undergraduate students at the faculty. Students can be admitted to the track after completing at least 30 credits with a GPA of at least 85, or a GPA of 80–85, with the approval of an advisor

Students who complete this specialization are awarded a certificate that confirms they have successfully completed it. The certificate will be signed by the dean of the faculty and the head of the Quantum Center.

The process for receiving the certificate: The certificate will only be awarded after all the degree requirements in one of the faculty’s study tracks are fulfilled, in addition to the requirements of the secondary specialization track. Students’ academic performance in terms of meeting the requirements of the specialization track will be monitored and controlled by the faculty’s undergraduate secretariat.

To complete the study track students are required to take five courses from the selection of courses specified below. Track courses can include courses that are also compulsory or elective as part of the regular degree. Students in three-year study tracks must complete at least 2.5 credits beyond the credit quota required for the degree. Students in four-year study tracks will not be required to complete any additional credits.

The following two courses are compulsory:

1. XXXX (236990) for 3 credits

\* Students can take XXXX (116031) for 3.5 credits instead of XXXX.

1. XXXX (236343) for 3 credits

Students must complete three of the four following requirements:

1. XXXX(1) (124400) for 5 credits.

\*\* Students can take XXXX (115203) for 5 credits (appropriate for students in the XXXX study track) or XXXX (046241) for 3.5 credits (appropriate for students in the computer engineering study track) instead of XXXX (124400).

1. Advanced quantum information courses: one course from the following list: XXXX (236640/41) for 2 or 3 credits, XXXX (236823) for 2 credits, or XXXX (116040) for 2 credits.
2. An advanced course in quantum technologies: one course from the following list: XXXX (046243) for 3 credits, XXXX (116083) for 2 credits, XXXX (236991) for 3 credits, XXXX (116037) for 2 credits, XXXX (126604) for 2 credits, or XXXX (126605) for 4 credits.
3. A core course: one course from the following list: XXXX (236313) for 3 credits, XXXX (236309) for 3 credits, XXXX (236518) for 2 credits, XXXX (236359) for 3 credits, XXXX (236521) for 2 credits, XXXX (236330) for 3 credits, XXXX (046197) for 3 credits, XXXX (234292)(2) for 3 credits, XXXX (236201) for 3 credits, XXXX (236350) for 3 credits, XXXX (236506) for 3 credits, XXXX (236334) for 3 credits, XXXX (044334) for 3 credits, XXXX (236) for 3 credits, or XXXX (236501) for 3 credits.

Please note:

1. There are four prerequisites for XXXX: XXXX (**114052**) and XXXX (**124120**), which appear on the list of scientific courses/in the physics-chemistry chain.

XXXX (**104131**) which is part of XXXX (104135) and XXXX (**104004**) which is part of XXXX (114032) along with XXXX (104033) – the two courses, 104135 and 104033 appear in the list of additional math courses.

The list of scientific courses and additional math courses appear under the general four-year study track section.

1. XXXX – only for computer engineering students.

# Students who do not choose the quantum course option will need to add one of the following:

1. XXXX (114073) (note the prerequisites and proximity of this course);  
   or
2. XXXX (114054) and XXXX (104004) as well as XXXX (104131) (or inclusive courses);

or

1. XXXX (11405) and XXXX (104033) as well as XXXX (104131) (or inclusive courses).

**The Lapidim Excellence Program**

The program’s goal is to train highly skilled software and hardware development engineers with an emphasis on entrepreneurship and management. It is intended for outstanding students with exceptional leadership and management capabilities to prepare them for taking on key roles in the industry.

Program participants must meet all the study requirements of one of the faculty’s study tracks (including joint programs) and accumulate at least 12 credits from managerial and entrepreneurial courses. In addition, they are required to participate in special activities, including an academic tour of the industry that takes place every summer.

Students can choose these 12 credits from the following list or other courses with the approval of the program’s coordinator:

|  |  |  |
| --- | --- | --- |
|  |  | Credits |
| 094222 |  | 3.5 |
| 094423 |  | 3.5 |
| 094564 |  | 2.5 |
| 094591 |  | 3.5 |
| 094816 |  | 2.0 |
| 094821 |  | 3.5 |
| 095605 |  | 2.5 |
| 096211 |  | 3.5 |
| 096617 |  | 2.5 |
| 096807 |  | 3.5 |
| 097317 |  | 2.5 |
| 097800 |  | 3.5 |
| 214909 |  | 2.0 |
| 236700 |  | 3.0 |
| 324864 |  | 1.0 |
| 324442 |  | 2.0 |
| 324520 |  | 2.0 |
| 324527 |  | 2.0 |
| 324528 |  | 2.0 |

Students admitted to the program are exempt from tuition fees. They also receive a monthly subsistence stipend and the mentorship of a faculty member, in addition to being provided with a dedicated state-of-the-art study area.

Some clarifications:

1. Spaces are limited and are mainly intended for new students with particularly high achievements during their first year. Admission to the program is based on a dedicated screening process.
2. To stay in the program, students must achieve a GPA of at least 86 and accumulate 18 credits or more every semester throughout their entire studies.
3. Graduates are awarded a Lapidim graduate certificate by the faculty.
4. The scope of financial support will be determined once a year based on the resources available.
5. The required entrepreneurship and managerial courses can be considered elective courses as part of the degree (provided all the degree requirements are met in full).

For additional information, see the program’s website:

<http://lapidim.cs.technion.ac.il>

**The Academic Leadership Excellence Program**

The Faculty of Computer Science offers a new excellence program titled “the Academic Leadership Program.” The program trains outstanding students with potential to have an academic career as future researchers and university faculty members. Emphasis is placed on the important qualities needed to be successful faculty members, i.e., academic excellence, a passion for science and research, and the ability to drive a research team.

Program participants must meet all the requirements of their study track (including joint programs) as well as the requirements listed below, and actively participate in special program activities.

* Completing the XXXX course (236001) as part of the track requirements.
* Building a research proposal that is approved for master’s studies during their undergraduate studies, under the guidance of a faculty member.
* Complete three advanced courses that are related to their research topic, in addition to their track requirements and with the approval of the academic head of the program.

Participants are entitled to special benefits during the program, including full exemption from tuition fees, a monthly subsistence stipend for ten months of the year (the amount of which will be determined during their studies), and personal mentorship by a faculty member.

Some clarifications:

1. Spaces are limited and are mainly intended for new students with particularly high achievements during their first year. Admission to the program is based on a dedicated screening process.
2. To stay in the program, students must achieve a cumulative GPA of at least 88 and accumulate 18 credits or more every academic semester for as long as they remain in the program.
3. Graduates are awarded an Academic Leadership Graduate certificate by the faculty.
4. The scope of financial support will be determined once a year based on the resources available.

**Miscellaneous**

1. A requirement to complete compulsory courses can be met even when there are slight changes in the number of credits for compulsory courses appearing in the catalogue, provided all the compulsory courses are taken and the total number of credits required for the degree is fulfilled as stipulated in the catalogue (missing credits can be completed by taking elective faculty courses).
2. A requirement to do two projects can be met by taking a project in one semester and continuing it in the following semester as part of XXXX (236504). In such cases the project will also be graded after the first semester. However, a project continuation course can only be taken once.
3. Undergraduate students can only enroll in one seminar per semester.

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**Graduate Studies**

The Faculty of Computer Science offers continuing education programs for M.Sc. in Computer Science, M.Sc. in Science, and Ph.D. degrees. Outstanding students can transfer to a direct Ph.D. track during their master’s studies.

The faculty’s goal is to train students to become outstanding scientists and engineers, provide them with vast and thorough knowledge and engineering capabilities, and help them develop managerial and technological skills so they will be able lead present and future science-based industries. To that end, the faculty selects the best candidates and maintains high academic standards, providing students with broad and in-depth knowledge to help them succeed in the rapidly developing field of computer science.

**Specialization and Research Fields in the Faculty**

Extensive teaching and research on a broad range of topics takes place at the faculty:

* Theory of algorithms (serial and distributed, deterministic and probabilistic)
* Coding theory (source encryption, channel encryption, and error correction codes)
* Cryptography
* Quantum information processing
* Computational complexity theory
* Logic for computer science
* Data structures
* Databases
* Models and performance assessment of computer systems
* Machine learning
* Numerical algorithms
* Parallel and distributed programming
* Sorting and routing networks
* Geometric design
* Formal verification of software and hardware systems
* Programming languages
* Software engineering
* Simulation
* Computer communication networks
* Computational linguistics and natural language processing
* Artificial intelligence
* Neural networks
* Expert systems
* Computational geometry
* Computer graphics
* Digital image processing
* Computer vision
* Robotics
* Discrete event systems
* Bioinformatics

In addition to the theoretical research possibilities in these fields, the faculty has a broad infrastructure of research labs focused on a variety of fields, including robotics, computer vision, artificial intelligence, computer communication networks, software systems, computer systems, natural language processing, information and cyber security, machine learning, information and learning, information and memory storage, bioinformatics, and quantum information processing.

The faculty is located in a state-of-the-art building designed for the convenience of the faculty members and students. The building's resources include auditoriums and classrooms equipped with some of the most advanced multimedia systems, a large multi-purpose center that provides a modern learning environment, and a cutting-edge library that serves as a contemporary learning center.

**Master’s Studies**

**Admission to the M.Sc. in Computer Science Track**

Students who have completed their undergraduate studies with honors at the Faculty of Computer Science, or in one of the tracks the faculty offers in collaboration with other faculties, can be admitted to this track. Candidates who have completed their undergraduate studies in other institutions may need to complete some courses. The professional achievements of candidates with practical experience and recommendation letters will be taken into account during admission deliberations. As a rule, only internal students will be admitted to the program; outstanding external students will be admitted in special cases.

**Admission to the M.Sc. Track**

Students who have completed their undergraduate studies with honors in scientific or engineering tracks will be admitted to this track. To gain admission, students need to contact a faculty member to serve as their advisor. Students’ curriculum for these tracks and the course completion programs (if applicable) will be coordinated with the advisor and the committee coordinator and approved by the graduate studies committee.

**Study Requirements (For All Master’s Tracks)**

Master’s students are required to complete several courses and complete a research thesis or final paper under the guidance of an advisor who is a faculty member. Students must complete 18 credits dedicated to specializing in their research field, according to a curriculum built in coordination with their advisor.

Graduates of the general three-year undergraduate track are required to complete 30 credits, including at least six elective computer science courses that are not advanced topics, a project or seminar, from at least four out of 11 different specialization groups in the general four-year study track, as specified in the Faculty of Computer Science Graduate Studies Catalogue. Students who have been instructed to complete study requirements must complete them in full. Six of the 30 cumulative credits required for the degree can be undergraduate-level credits.

XXXX (236267) and XXXX (236343) are compulsory. Students who have not taken them during their undergraduate studies must complete them as part of their continuing education program for a master’s degree.

To find a thesis advisor, students need to contact a faculty member who specializes in their fields of interest. External participants in the continuing education program cannot choose an adjunct professor as their advisor. The research can be theoretical or an advanced engineering project. In special cases, students will be permitted to do a final paper instead of a thesis; in such cases students will need to accumulate 8 additional credits.

**Doctoral Studies**

**Admission**

Outstanding students with a master’s degree in a relevant field will be admitted to these studies. Prior to their admission, students must secure an advisor who is a faculty member and define their research field. Doctoral students’ curriculum, as well as the course completion program, for students without a background in computer science will be determined on an individual basis by the advisor and the graduate studies committee. External students cannot choose an adjunct professor as their advisor. As a rule, students must be full-time internal students at the faculty in the continuing education program for at least one year during the completion period.

**Study Requirements**

Course completion requirements for doctoral students at the faculty are as follows:

1. Advanced computer science courses (or computer science courses that are part of both the undergraduate and graduate programs) at a scope of at least 12 credits.
2. Students in the direct Ph.D. track are required to complete 6 credits in addition to the credit requirements for a master’s degree.

**Additional Information Resources**

* A detailed catalogue for graduate studies at the Faculty of Computer Science is available at the graduate studies secretariat at the faculty or on the faculty’s website.
* Information for candidates can be obtained from the graduate studies secretariat at the faculty. Please contact Ms. Limor Gindin: tel. 04–8294226 email. [limorg@cs.technion.ac.il](mailto:limorg@cs.technion.ac.il)
* Link to the Faculty of Computer Science website: <https://graduate.cs.technion.ac.il/>