Department of Materials Science and Engineering

**MSc program**

**Target population**

The program targets students with a BSc and/or MSc in Materials Science and Engineering, other disciplines of Engineering, Chemistry, Physics or Biology, from recognized academic institutions in Israel and worldwide.

 **Admission requirements**1

The candidate's weighted grade average in the BSc degree must be 80 or more.

In addition, the candidate must present documentation of his/her final relative ranking in his/her BSc class. In exceptional cases the Head of the Department is authorized to approve the admission of a student whose achievements are below the official requirement, but not lower than 75, to the MSc program in a provisional status, for a maximum period of one year. In such cases the Head of the Department takes into consideration factors like substantial professional experience in the field of materials, class ranking, warm recommendations from professional experts (from academia and/or industry), etc.

Candidates with a BSc in Materials Engineering from a recognized university are admitted in either a 'Regular Student' or 'Accumulative Studies' status. Graduates from other disciplines are admitted to a supplementary program, based on the admission criteria, and will only be admitted to the MSc program after meeting the supplementary requirements.

Outstanding graduates of BSc programs in Electrical Engineering, Mechanical Engineering or Biomedical Engineering at TAU may continue their studies in a direct track to the MSc, completing both the BSc and MSc in five years.

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1 The mandatory version of Registration and Admission Requirements, supplementary to [the university's general requirements](https://go.tau.ac.il/m.a_admissions). Up-to-date information may be found on the university's registration website.

**Academic Coordinator**

An Academic Coordinator has been appointed for the MSc program in the Materials Science and Engineering Department. All questions concerning academic contents, admission requirements, required supplementary studies, approval of supervisors and examiners for theses and final projects etc. should be addressed to the Academic Coordinator. In some cases, the approval of the Head of the Department is also required.

The Academic Coordinator serves as a study advisor to MSc students who have not yet chosen a thesis supervisor.

**Stages of the program**

Following the successful completion of the supplementary requirements, or if no supplements are needed, the MSc program at the Faculty of Engineering includes two stages:

First – Accumulative Studies

Second – Studies in the Regular Student status

**Accumulative stage**

In the first stage students accumulate credit points for the MSc degree~~.~~ They must take a minimum of 3 Engineering courses every year and pass at least two of them.

Studies in the Accumulative stage must be completed within a maximum of 3 academic years. In addition, Accumulative stage students must pass all the Department's mandatory courses (including repetition following failure, if needed) no later than the end of their fourth semester of studies. Therefore, students are advised to take all mandatory courses in the first year of studies, to allow for repetition, if needed, before the end of the second year.

**Regular Student stage**

In the second stage students must complete their MSc requirements, including courses plus a thesis or final project.

Fulltime students are admitted to the Regular Student status right from the start of their MSc studies.

Prerequisites for advancing to the Regular Student status in the Research Track: 1) Acquiring a permanent supervisor, and 2) Accumulating 18 credit points in Engineering courses. Accumulated courses must be completed with a minimum average grade of 80 for students intending to study Fulltime, and 70 for everyone else. Students must also pass all mandatory departmental courses.

A student at the Accumulative Studies stage who transfers to Fulltime Studies gains the Regular Student status.

In every Track of studies at least 25% of the curriculum must consist of engineering courses taken in the Regular Student status. In the Regular Student stage students must complete all requirements for the MSc degree in the chosen Track within a maximum of two years.

**Program requirements**

All students are required to participate in departmental seminars.1

In addition, students must take the mathematics course and two additional courses from the list (a course from the Physics & Material Surfaces category and a course from the Material Characterization category) for a minimum of 8 credit points.

Students must choose elective courses for a minimum of 12 credit points in the Thesis Track, and 22 credit points in the Final Project Track.

Selected undergraduate courses, defined as 'Equivalent Level' courses, are approved for graduate studies only if the student did not take the same or a similar course during his/her BSc studies. Students in both Tracks may take up to 2 equivalent level courses, for a total of 6 credit points.

 In light of the interdisciplinary nature of both the program and list of instructors, and in order to enable students to expand their knowledge in areas that are important to their research and/or work in industry, courses outside the Department may also be taken, provided they are relevant to the curriculum, or for students in the Thesis Track, to either the curriculum **or** the research program. Students may take such courses for up to 4 credit points in the Thesis Track (approved by the supervisor) and 6 in the Final Project track (approved by the Academic Coordinator). Alternately, students may complete the credit points required for the degree by taking more courses from the list offered by the Materials program. MSc students in both Tracks must complete their courses with a minimum average grade of 75.

**Structure of MSc requirements**

|  |  |  |
| --- | --- | --- |
|  | **Thesis** | **Project** |
| **Credit points from courses, minimum**  | 24 credits | 36 credits |
| **Weight of thesis/project (in addition to courses)** | 12 semester hrs. 3 | 3 credits2 |
| **Supplementary courses (if needed)** | No credits | No credits |
| **Departmental seminars** | No credits | No credits |
| **Mandatory courses, minimum** | 8 credits | 8 credits |
| **Elective courses, minimum** | 12 credits | 22 credits |
| **Other courses approved by permanent supervisor, maximum** | 4 credits | 6 credits |

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1 See Section 1.8

2 Without semester hours (for determining tuition fee)

3 Thesis supervision (for determining tuition fee)

**Thesis/ Final Project**

A thesis and a final project differ mainly in their scope. In both a scientific/ technological problem is defined, followed by a survey of current literature, and a work plan for attaining the goals set in light of the survey. After the study has been completed, its results are presented, discussed and analyzed, leading to discussion and conclusions, in compliance with the scientific standards relevant to the field of research.

As a rule of thumb, a thesis takes 9 full months (100%) to complete, while a project takes about 25% of the time. The thesis or project is submitted in Hebrew or English, as agreed with the supervisor. The final project track is intended for external students only (mainly students who combine work in industry with their studies).

**Thesis**

The purpose of an MSc thesis is training the student in methods of research, including: a critical survey of literature, conducting research of the scope customary at the Faculty, and at an appropriate academic level, and submitting an essay on the relevant topic to the Departmental Committee. The study can be either theoretical or experimental, basic or applied in nature, and must emphasize the analytical scientific approach and the contribution to furthering scientific understanding and/or updating existing scientific knowledge. It can also be interdisciplinary, involving collaboration between research groups from different Faculties.

A Fulltime student, who began his/her studies at the Faculty in the Regular Student status, must apply for the appointment of a permanent thesis supervisor as early as possible, and no later than the end of his/her first semester of studies.

Work on the thesis is conducted under a permanent supervisor, for a total of 12 credit points. The supervisor is a faculty member who instructs the student throughout his/her research and studies, serving as the link between the student, the program's Academic Coordinator, the Head of the Department, the Faculty Committees and other Faculty institutions – in all issues related to the MSc program. In the case of interdisciplinary research, a supervisor from each discipline is not required automatically, but in some cases the Head of the Department and/or Academic Coordinator may require the appointment of more than one supervisor. The permanent thesis supervisor is a faculty member chosen from these lists1, who has agreed to the student's request to serve as his/her permanent supervisor, and received the approval of the program's Academic Coordinator, as well as the Faculty's MSc Committee - all this under the provisions of TAU's General MSc Committee. The student must submit his/her application for approving a permanent supervisor, signed by the intended supervisor, to the Academic Coordinator. The application must include a brief description (up to one page) of the topic of the thesis.

In special cases a secondary supervisor may be appointed for an MSc thesis. The secondary supervisor must have a PhD degree, and must receive the approval of the University's MSc Committee, based on a recommendation from the Faculty Committee. The secondary supervisor may come from either academia or industry.

Students in Regular Student status in the MSc Thesis Track must submit a research proposal of 2-3 pages, approved by the supervisor. At this stage the supervisor approves the student's study program, and may require the student to take more courses as needed. The proposal must be submitted to the Secretariat within 6 months of the beginning of work on the thesis, and at least 6 months before the thesis deadline. A representative of the Study Unit in the Unit MSc Committee approves the proposal.

A student who wishes to change the subject of his/her research, yet remain under the supervision of the appointed supervisor, must submit a request, including a well-outlined explanation and the supervisor's recommendation, to the Program Coordinator. A student who wishes to change the subject and also transfer to a new supervisor, must submit a request that includes a well-outlined explanation together with recommendations from both supervisors, to the Program Coordinator.

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1Members of the core faculty are permitted to supervise research on any topic. Secondary faculty members may supervise research on any topic within their fields of activity that is clearly linked to the materials, without any approvals beyond those required by this passage. 'Other' faculty members may supervise research on any topic within their fields of activity that is clearly linked to the materials, but must first consult the program's Academic Coordinator.

**Final Project**

The purpose of a final project (for 3 credit points) is to train the student in methods of engineering design and/or research, including: a critical survey of literature of the scope customary at the Faculty, and at an appropriate academic level, and an essay on the relevant topic submitted to the project supervisor.

The project can be either theoretical or experimental, with a focus on either engineering design or investigation of a hypothesis, and must emphasize the analytical scientific approach and the contribution to furthering existing understanding and/or knowledge. Supervision is on a personal basis.

A graduate with an MSc in the project track from the Faculty of Engineering, who wishes to go on to the PhD program, must meet the requirements set by the University for students with an MSc without a thesis from other universities. In particular, such a student is required to complete an MSc thesis, as customary at the Faculty.

A project supervisor may be a senior faculty member from an Israeli institution of higher education, or a suitable person from industry, who is an engineer with an MSc degree (at least). The appointment must be approved by the Academic Coordinator. When the project supervisor is not a faculty member at the Faculty of Engineering, an additional supporting supervisor must also be appointed.

A student may request permission to transfer from the project track to the thesis track, or vice versa, under the same supervisor. The request must be approved by the supervisor, the Academic Coordinator, and the Faculty's MSc Students Committee. Also, a supervisor may ask the Unit Committee, after notifying the student, to reduce the scope of work from a thesis to a final project, if the student has not shown sufficient initiative, progress or innovation in his/her research. When the scope is reduced to a final project, the student must complete the quota of credit points, as required in the final project track.

A student in the thesis track who was admitted directly to the Regular Student status, but has not submitted a consent form from a permanent supervisor and a description of the topic of his/her thesis by the end of the first semester after admission, is transferred to a track without a thesis.

**Mandatory participation in seminars**

Students are required to participate in seminars on Materials Science and Engineering organized by the Department or by other academic units at Tel Aviv University.

*During their MSc studies, students in the final project track must participate in 8 seminars, and students in the thesis track must participate in 14 seminars.*

Students are required to fill out a seminar participation form1 and ask the Academic Coordinator or another faculty member present at the seminar, to sign it at the end of each seminar.

Participation, as a lecturer or poster presenter, in a Materials conference of at least one day, is equal to 4 seminar hours. **This credit is given only once during the student's MSc studies.** To receive it the student must submit an application to the Department's Seminar Coordinator, together with his/her permanent supervisor's recommendation, the program of the conference indicating the student's presentation, and proof of participation in the conference.

A student who has completed the requirement for participation in seminars submits the record to the Students' Office, where it is added to his/her personal file, as a fulfilled requirement for the degree.

Program graduates receive a **Master of Science (MSc) in Materials Science and Engineering**

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1 To download the form click here: <http://www6.tau.ac.il/matnano/images/stories/docs/attendance_form.pdf>

**Study Program**

**Academic Coordinator – Dr. Ariel Ismach**

**Mandatory courses**

All students must take 3 mandatory courses:

*Mandatory course in Mathematics from the list below*

*A course from the 'Physics and Material Surfaces' category*

*A course from the 'Material Characterization' category*

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| --- | --- | --- | --- | --- | --- |
| **Course No.** | **Course name** | **Credit pts.** | **Hrs.** | **Prerequisites** | **Semester** |
| **Mandatory** |
| [0581.5002](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815002) | Joint Seminar | - | 1 |  | 1,2 |
| **One of the following:** |
| [0510.5001](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05105001) | Differential and Integral Equations | 3 | 3 |  | 1,2 |
| [0510.5002](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05105002) | Functional Analysis | 3 | 3 |  | 2 |
| [0540.5001](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05405001) | Mathematical Methods in Engineering | 3 | 3 | Complex Functions | 1 |
| **Elective courses**Track with thesis – minimum of 12 credit pointsTrack with project – minimum of 22 credit points |
| **Physics and Material Surfaces**Students must take at least one course from this category |
| [0581.4321](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05814321) | Magnetic Materials1,2,3  | 3 | 3 | Physics 2; Physics of Materials  | 1 |
| [0581.5121](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815121) | Introduction to Surface Science | 3 | 3 |  | 2 |
| [0581.5221](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815221) | Atomistic Simulation of Materials1 | 3 | 3 |  | 1 |
| [0581.5222](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815222) | Processes at Single-Crystal Surfaces1 | 3 | 3 | Introduction to Materials Science and Engineering | 1 |
| **Materials Engineering** |
| [0581.5211](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815211) | Optical Materials1 | 3 | 3 |  | 2 |
| [0581.5212](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815212) | Composite Structures and Functions | 3 | 3 | Introduction to Materials Science and Engineering; Composite Materials | 1 |
| [0581.5312](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815312) | Smart Materials  | 3 | 3 | Introduction to Materials Science and Engineering; Physics 2 | \* |
| [0581.5313](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815313) | Materials Designed for High Temperatures1,2 | 3 | 3 | Introduction to Materials Science and Engineering; Mechanical Behavior of Materials | 2 |
| [0581.5381](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815381) | Engineering Failure Analysis | 3 | 3 | Introduction to Materials Science and Engineering; Mechanics of Solids | 1 |

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| **Material Characterization** |
| [0581.5131](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815131) | X-Ray Crystallography4 | 3 | 3 |  | 1 |
| [0581.4231](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05814231) | Transmission Electron Microscopy in Materials Science3 | 3 | 3 |  | \* |
| [0581.5232](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815232) | Laboratory in Scanning Electron Microscopy (SEM) 5 | 1 | 1 | Scanning Electron Microscopy (SEM) | \* |
| [0581.5233](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815233) | Analytic Transmission Electron Microscopy (A TEM) for Characterization of Materials1 | 2 | 2 |  | 2 |
| [0581.5234](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815234) | Laboratory in Analytic Transmission Electron Microscopy (A TEM) for Characterization of Materials | 1 | 1 | Analytic Transmission Electron Microscopy for Material Characterization | 2 |
| [0581.5235](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815235) | Analysis of Materials with New Spectroscopic Methods (AES/XPS) 1 | 2 | 2 |  | \* |
| [0581.5236](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815236) | Laboratory in Analysis of Materials with New Spectroscopic Methods (AES/XPS)3 | 1 | 1 |  | \* |
| [0581.5237](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2018&course_num=05815237) | Advanced Powder Diffraction Techniques4 | 2 | 2 | Introduction to Crystallography and Structure Analysis | 2 |
| [0581.5332](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815332) | Scanning Electron Microscopy (SEM) 1,2  | 2 | 2 |  | \* |
| **Processes and Devices** |
| [0510.6610](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05106610) | Photonic Devices: Principles and Applications | 3 | 3 | Classical Optics | 2 |
| [0510.6701](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05106701) | Advanced Semiconductor Physics | 3 | 3 | Electronic Devices | \* |
| [0512.4700](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05124700) | Microelectronics3 | 3 | 3 | Electronic Devices (recommended) | 1 |
| [0512.4702](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05124702) | Introduction to Micro-Electro-Mechanical Systems3 | 3 | 4 | Introduction to Semiconductor Physics | 2 |
| [0512.4704](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05124704) | Solid State Devices3 | 3 | 4 | Electronic Devices | 2 |
| **Nanoscience and Nanotechnology** |
| [0321.4813](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=03214813) | Mesoscopic Physics and Nanomaterials | 3 | 3 |  | 2 |
| [0351.4034](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=03514034) | Introduction to Nanoscience and Nanotechnology | 3 | 3 |  | \* |
| [0510.7703](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05107703) | Nanometric Devices – Properties and Applications1 | 2 | 2 |  | \* |
| [0581.5251](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815251) | Synthesis, Characterization and Applications of Low-Dimensional Materials1 | 3 | 3 |  | \* |
| [0581.5255](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815255) | Motion at the Nanoscale: Principles, Materials and Devices1 | 2 | 2 | Introduction to Materials Science and Engineering | \* |
| **Materials in Biology and Medicine** |
| [0321.4824](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=03214824) | Physics of Bio-Polymers | 3 | 3 |  | \* |
| [0351.4611](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=03514611) | Advanced Methods in Optical Microscopy | 2 | 2 |  | \* |
| [0453.4105](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=04534105) | Physical Methods in Biology: Devices, Principles and Applications | 3 | 3 |  | 1 |
| [0553.5332](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05535332) | Drug-Eluting Biomedical Devices  | 3 | 3 | Biomaterials or Introduction to Materials Science and Engineering | 2 |
| [0553.5335](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05535335) | Natural Polymers for Biomedical Applications | 3 | 3 | Biomaterials or Introduction to Materials Science and Engineering | \* |
| [0581.5361](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815361) | Biomaterials1,4 | 3 | 3 | Introduction to Materials Science and Engineering | 1 |
| **Materials in Energy Systems** |
| [0510.7701](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05107701) | Photovoltaic Conversion of Solar Energy  | 2 | 2 | Advanced Semiconductor Physics | \* |
| [0581.4371](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05814371) | Materials for Energy Systems3,6 | 3 | 3 |  | 1 |
| [0510.7003](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2018&course_num=05107003) | Scientific Writing in English | - | 2+2 |  | 1,2 |
| [0553.7000](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2018&course_num=05537000) | Practical Ethics for STEM Students | 3 | 3 | See Department of Biomedical Engineering | 2 |

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1 The course is taught in English, unless the lecturer decides it will be taught in Hebrew.

2 MSc course open to BSc students

3 Equivalent Level course also open to graduate students. Approved if the student did not take the same or a similar course as an undergraduate. A maximum of 6 credit points from Equivalent Level courses is recognized in the Thesis Track, and a maximum of 9 in the Final Project Track.

4 The course is taught in the English language

5 To participate in the laboratory course students must first pass the theoretical course. The number of participants is limited, and admission is approved by the lecturer based on considerations such as: the student's study program, whether he/she is a fulltime student, whether the equipment is essential for the thesis research (confirmation of permanent supervisor required), number of available openings, etc.

6 Students who have taken courses [0351.3311](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=03513311) or [0581.5271](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05815271) may not register for this course.

\* Course not offered in the 2018-2019 academic year

**Supplementary studies**

Candidates with a BSc from university Engineering Faculties who are changing their field of study, candidates with a BSc from university Faculties of Exact Sciences and Life Sciences, and graduates of 4-year Engineering Colleges are required to complete a supplementary studies program as a prerequisite for admission to the MSc program in Materials Science and Engineering (both the Accumulation and Regular Student stages).

Supplementary courses do not grant credit points. The program's Academic Coordinator requires each student to take 4 of the courses listed in the table below, taking into consideration the area in which the student attained his/her BSc, and the potential contribution of the supplementary courses to the student's research and/or workplace.

The Academic Coordinator is authorized to reduce the number of required courses for outstanding students, graduates of prestigious programs (e.g. Talpiot), or in other special circumstances.

Students must complete the supplementary courses with a minimum grade of 70 per course, and a minimum weighted average of 80 (the course with the lowest grade is weighted at half its weight in the Faculty Manual). Final failure in a supplementary course in two consecutive registrations leads to termination of studies.

If a candidate has not successfully completed his supplementary studies within a period of two years, or has failed twice (final failure) in at least one of the supplementary courses – his/her studies at the Faculty are terminated. A candidate who has successfully completed his/her supplementary program may submit an application for admission to the Faculty at the Faculty Office.

**List of optional supplementary courses**

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| --- | --- | --- | --- |
| **Course No.** | **Course Name** | **Hrs.** | **Semester** |
| [0351.2202](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=03512202) | Thermodynamics | 6 | 1 |
| [0581.2111](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05812111)[0581.1111](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05811111) | Introduction to Materials Science and Engineering (for Materials students)**or**Introduction to Materials Science and Engineering  | 44 | 12 |
| [0581.3111](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2018&course_num=05813111) | Physical Metallurgy  | 4 | 1 |
| [0581.3121](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05813121) | Physics of Materials | 4 | 1 |
| [0581.3123](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2018&course_num=05813123) | Diffusion in Solids | 3 | 2 |
| [0581.3181](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05813181) | Mechanical Behavior of Materials | 4 | 2 |
| [0581.4121](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2017&course_num=05814121) | Momentum, Heat and Mass Transfer (for Materials Engineers) | 4 | 1 |
| [0581.4132](http://yedion.tau.ac.il/yed/yednew.dll?MfcISAPICommand=but&year=2018&course_num=05814132) | Introduction to Crystallography and Structure Analysis | 3 | 2 |