Philadelphia University

Communications & Electronics Department

Undergraduate Handbook

2016/2017

Contents

I Introduction

This handbook contains important general information for students undertaking the Undergraduate Degree program in the Department of Communications and Electronics. During the academic year 2016 / 2017, this handbook will be made available on paper and on the web.

Your degree program is subject to regulations contained in the **University Student Guide**. This departmental handbook interprets the regulations and your tutors may give advice, but the University Student Guide defines the regulations.

I.I.I Important Dates

I.I.I.I Registration:

Admission criteria are issued by the Higher Education Council, which governs all private universities (80% in the Tawjihi exam). First year students must attend the University and they will be given a full timetable for the introductory activities. Departmental and University registration must be completed at the time specified in the introductory timetable (shown below). Returning students must also register in the times specified during the introductory week.

The full time study

First year students must attend a meeting at 8.00 AM on Sunday 29 September, 2016.

I.I.I.II Session Dates 2016-2017

I.I.I.II.I A. FIRST TERM

- **The morning study**

  Begins: Sunday 16th October 2016

  Ends: Sunday 05 February 2017

  The first semester includes

  - Teaching, learning, and assessment activities in communications & electronics engineering will run for 16 weeks, from Sunday 16th October 2016 to Sunday 05th February 2017.

I.I.I.II.II SECOND TERM

- *The studies schedule*

Begin: Sunday 26 February 2017
End: Sunday 24 June 2017
The second semester includes
- Teaching, learning, and assessment activities in communications & electronics engineering will run for 17 weeks, from Sunday 26 February to Sunday 17 June 2017

C. SUMMER TERM

- **The morning and evening studies**

Begin: Sunday 9th July 2017
End: Thursday 31 August 2017
Summer semester includes teaching, learning, and assessment activities, which will run from Sunday 22nd June to Thursday 28th August 2016.

- **Examination Periods**

	First	Second	Final
First Semester	**18-26/11/2016**	**27/12/2016 - 7/1/2016**	**30/1-7/2/2017**
Second Semester	**30/3-7/4/2017**	**20/4-12/5/2017**	**11-19/6/2017**
Summer Semester	**31/7-3/8/2017**	**14-17/8/2017**	**27-30/8/2017**

3. Timetable

The lecture timetable is published separately from this book. Whilst every attempt is made to schedule reasonable combinations of course units (modules), various constraints make some combinations and outside options impossible. If you have a timetable problem, please consult your personal tutor in the first instance.

III. Scope and Input Resources

1. Aims and Learning Outcomes

Educational Aims:

The field of communications and electronics engineering which include, mobile phone systems, data communication, digital broadcasting and microelectronics technologies, continues to be one of the fastest growing engineering fields.

All Communications systems require the design of electronic subsystems, so that, the communications and Electronics Engineering program cover aspects of both electronic and Communication systems analysis and design. Such program aim to:

- Provide students with broad communication and electronic skills that will enable their career and professional accomplishments.
- Give students strong abilities in the fundamentals of communications and electronics engineering.
- Provide the opportunity for students to apply their knowledge to systematically solve engineering problems using appropriate tools and modern technology.
- Provide student with a comprehensive training in laboratory techniques, the skills of investigation, planning and handling of experimental apparatus, project design and its practical implementation.
- Provide student with training in the communication and electronic fields in different related enterprises and to offer the opportunity to develop related skills and knowledge to a high level.
- To enable students to understand the structures and processes of communication systems and the design of their electronic subsystems and to adapt to the rapidly changing technology.
- To provide students with knowledge of modern data acquisition and data communication techniques for a variety of engineering applications.
- Make students applying the design and laboratory skills expected of practicing communication and electronic Engineers.

In addition the students will acquire and develop many valuable skills such as the ability to use different engineering tools and equipment in order to analyze, evaluate, select and design an innovative System for the purpose of problem solving. The student will acquire many practical skills through the design and implementation of different communication and electronic projects circuits and to provide an acceptable prototype for such a project.

The knowledge and skills will prepare the student for further study or employment either in communication field, in electronics field or in both of them.

Learning Outcomes:

Learning outcomes describe what student should know and be able to do if he makes full use of the opportunities for learning that the department provides.

A) <u>Knowledge and Understanding Skills:</u>

You will obtain knowledge and understanding of

A1) Mathematical tools relevant to communications and electronics systems.

A2) Fundamental technological concepts, principles, and techniques associated with electronics and communications systems.

A3) The structure of different communication and electronic systems.

A4) The way of thinking and how to design?

A5) The methods of developing the communication systems.

A6) Design and simulate different communication system and the electronic subsystems.

A7) How to build, as hardware, different communication systems.

B) Intellectual Skills:

The students will acquire and develop the thinking skills that should enable them to:

B1) Develop a strong grounding in the fundamentals and how to apply them.

B2) Develop an ability to analyze communication and electronic engineering problems and synthesize solutions.

B3) Apply appropriate techniques to the transmission systems that are currently used for data, voice and video over LAN and WAN broadband networks.

B4) Understanding, designing and developing different communication and electronic systems for processing signals and data.

B5) Analyze and identify the specifications and tools to design typical process control applications, applicable to data communications and its related electronics systems.

C) Practical Skills:

Students will acquire and develop the practical skills that should allow them to

C1) Use appropriate numerical and mathematical skills to describe, analyze and solve a problem in electronics or/and communication system.

C2) Use various laboratory equipment as diagnostic tool to detect a faults and identify a problem in electronics or/and communication system.

C3) Analyze, design, evaluate system behavior and test electronic or/and communication system using simulation or computer-based tool (engineering software tool).

C4) Implement electronic circuits for communication system.

C5) Undertake ongoing learning in order to keep up to date in the field on electronics and communication technologies.

C6) Deal with computer hardware and use it in electronic and **communication** project.

D) Transferable Skills:

Students will acquire and develop the key transferable skills that will enable them to:

D1) Clarify personal values and objectives.

D2) Work with a wide variety of people.

D3) Manage tasks and solve problems.

D4) Negotiate learning contracts.

D5) Think logically and critically.

D6) Use a range of technological equipment and systems.

Main Aims of Research

The Department of Communications & Electronics endeavors to formulate strategies which encourage perusal of research in order to:

1. Enrich & inform the curriculum as appropriate.
2. Improve the research output so that it is comparable to good quality examples nationally & internationally.
3. Engage staff members in scholarly activity.
4. Enhance University investment by attracting external funds.

2. The Department Staff

A. Academic Staff

a. Qualifications

The academic staff members are divided into two categories: full-time and part-time. The number of full-time staff members is 10(1 woman and 9 men), while the part-time staff depends on the number of students and the needs of the Department.

The academic staff members, who are between 28 and 55 years of age, have relatively adequate experience ranging from 2 years to 25 years.

b. Specializations

Full-time as well as part-time teaching staff members have various specialisations that can be divided into 10 categories

- Electrical Circuits
- Engineering Analysis
- Electromagnetics
- Computer Design and Microprocessors
- Power and Electrical machines and Automatic control.
- Electrical measurements and devices
- Electrical Communications (Analog & Digital)
- Electronics (Electronic Circuits and Digital Electronics)
- Computer and Wireless Communication systems.
- Engineering applications.

At present, there are seven research teams at the Department and young staff members belong to these teams.

B. Non-Academic Staff

Besides the academic staff, the Department has 4 other full time members, holding B.Sc. degrees and 2 full time members, holdign Diplom in Communications and Electronics fields. Those staff members have 2 to 6 years working experience and some of them are Philadelphia University graduates.

All of the non-academic staff members are qualified as laboratory tutors and assist lecturers in the laboratory hours. In addition, some of them are responsible for maintenance of Communications and Electronics devices in the laboratories and Electronics workshop.

3. Departmental Learning Resources

- **Code of Practice for Students of Communication and Electronics Administration**

This code of practice is supplementary to University regulations concerning the use of computing equipment which you are required to accept at Registration.

1. You must follow all rules, regulations and guidelines imposed by the Faculty of Administrative and Financial Sciences and the University in addition to the Department's Code of Practice.
2. You must not use machines belonging to the Department for commercial purposes without the prior written permission of the Head of the Department. You must not sell the product of any work you do using Departmental facilities without the prior written permission of the Head of the Department.
3. You must not write or knowingly store on machines belonging to the Department software that, if executed, could hinder or annoy other users, except with the prior written permission of the Head of the Department.

- **Student Bookshop**

Photocopy facilities are available in the student Bookshop, 7th floor in the faculty of engineering. Reference copies of textbooks are available at affordable prices. Copies of previous week's tutorial solutions are also available. Lending copies of textbooks are available in the University Library.

- **Printing**

You can take printouts (free of charge) in any Faculty labs. Some of labs contain at least one printer for this purpose.

- **Administrative Infrastructure**

There are 35 offices at the Faculty of Engineering used for administrative functions as follows: Dean, Assistant Dean, Dean's Secretary, 5 Department

Heads, 3 Department Head Secretaries, 1 room for student advisory services, and 1 general meeting room.

- **Academic Infrastructure**

  It is composed of
  - **15 Department** classrooms and one auditorium equipped with support facilities: computer, data show, overhead projector.
  - 5 laboratories.
  - 10 staff offices where each staff member is supplied with a PC.
  - 1 office for student guidance and the examination working groups.

- **Lecture Support Facilities**

  In the Department, there are3 data show used to support modules and seminar presentations.

- **The University Computer Centre**

  This centre provides the Department with training and maintenance facilities.

- **Networking Facilities**

  Ethernet: The PCs in each laboratory are connected to an Ethernet platform 10/100 Mbps.
  Intranet: All computing facilities of the University are connected to a Gigabit Intranet backbone.
  Internet: The University is connected to the Internet by 2 Mbps lines.

Library Facilities At the University level, a mixture of learning resources is available to staff and students through a fully equipped and sophisticated library. Engineering and other learning and teaching resources, up-to-date module textbooks are available in the library with five different texts for each module. Resources are updated regularly to meet current and projected module requirements. In addition, library resources are continuously monitored to assure availability and currency.
The electronic library is also a part of the main University library.

Extracurricular Activities

The University provides recreation facilities for students to enrich their talents.
This includes:

- A Deanship of Student Affairs which organises the social, cultural and sports events at the University. It also has an alumni office to keep track of graduates
- Several spaces for cultural activities e.g. celebration of festivals, etc
- Several common rooms for meetings, snacks, and cafeterias.
- Three Internet cafes each contain 11 PCs.
- One Student Club.

IV. Student Support and Guidance

1. Assistant Dean's Office

The Assistant Dean's Office (7th floor) is mainly for student advisory services. They deal also with all routine undergraduate enquiries. Problems which cannot be dealt with by the Assistant Dean will be referred to the Dean.

2. Academic Guidance

All new students should have academic (personal) tutors. The new students are grouped into groups of 20 – 30 students and each group is assigned to an academic staff member who is their academic tutor. The students remain with the same tutor till their graduation. The tutor deals with all routine undergraduate inquiries, advises for academic registration at the beginning of each semester, and any other outstanding problems. However, problems which cannot be dealt with by the tutor will be referred to the Head of the Department, the Dean of the Faculty, or to an appropriate member of academic staff. Academic guidance is available on specified dates in the terms, and any advisory service offered by the Assistant Dean is available daily to all students in the Engineering Faculty.

Time: 08.00 AM to 04:00 PM Sunday to Thursday during term.

The advisory service offers advice on departmental and University matters and helps with anything that concerns you, whether in your studies, in the Department, at the University or in your life outside the university. Each of the staff in these offices is available with information about the Department and university and the willingness to listen and help with whatever you bring. Note that

- All visits to the advisory service offices are strictly confidential.
- If you have difficulties with material on particular course units you should normally first approach your tutors (or lecturers/project supervisors). You may also consult with your tutors on matters that are more general but you can equally well call in at the Assistant Dean's Office.
- If you have health problems, you are welcome to consult an advisor in the Department but you may prefer to go directly to your doctor or to the University Clinic.
  Feel free to make use of these services at any time.

3. Student Affairs Deanship

Confidential, individual counseling on any matter affecting personal well-being or effectiveness is available at the Philadelphia University Student Affairs Deanship. The Deanship sees well over a hundred students a year and gives expert advice on problems such as low motivation, personal decision making, relationships, anxiety and family difficulties. People there are willing to help in finding fresh ways to cope with the emotional and personal aspects of problems and seek to do so in a collaborative, straightforward and empowering way with the individual concerned. Advice is available concerning referral to other

services, helping others and dealing with common student problems such as exam anxiety.

The Deanship is open from 8.00 AM to 4.00 PM, from Sunday to Thursday throughout the year and appointments can be made by calling in at the Dean of Student Affairs. All inquiries will be treated confidentially.

4. Tutoring Arrangements

Some of your course units will have tutorials, where you can discuss topics on a course unit and run through exercises. Usually, the lecturer of the course unit runs the tutorial. There will be an opportunity for you to ask questions on matters you do not understand.

As you have a personal tutor from the beginning of your University life, your tutor is there to help you on your way through University life. He/she will watch your progress and offer help and advice whenever necessary. If you get into difficulties, you should contact your personal tutor or visit the Assistant Dean at the earliest possible opportunity. Do not let things slide until it is difficult to rectify the situation, especially if you are getting behind with your work. Your personal tutor will also advise on your choice of course units, on departmental or University procedures and will provide references for jobs and other purposes.

Course lecturers are always available to discuss questions or problems with the course unit material. Each lecturer fixes at least six office hours on his timetable, which is posted on his office door. You can call in at these hours. For any reason, if these lecturers could not see you at these office hours, they may arrange an appointment at another time. It is important that any matter that affects your ability to study be reported to the Department - through your personal tutor, through the Assistant Dean or otherwise. The following are examples of matters that may affect your study: illness, personal or family difficulties (including illness in the family) or financial problems. In assessing your performance, the Department has a policy of trying to help you overcome difficulties you have encountered whilst studying. We can do this only if we are aware of the difficulties and have some idea of their extent.

5. Student Progress

Work and Attendance. The University regulations governing the Work and Attendance of students are outlined in the Student Guide 2010/2011. Full attendance is required at all lectures, laboratories, and any tutorials, which may be scheduled. Completed laboratory work should be handed in on time. Attendance at laboratories and at many lectures is monitored and attendance registers kept. Please note that students are required to undertake approximately thirty-six hours per week of study i.e. an average of two hours of private study will be required for every scheduled hour of lectures or laboratories. Some students may require much more time than this. ***Being a student is a full time occupation!*** Absence for holidays is not permitted in term-time. The experience of the Department confirms that lack of attendance leads to study problems and any student with problems

should consult his/her subject tutors or personal tutor. In addition, failure to attend can result ultimately in the University barring the student from sitting for the degree examinations. The duty of the lecturer is to keep continuous review of the work and attendance of the students with whom he is concerned. If the rate of student absences, in a course unit, is greater than 15% (or 20% for student representing the University in sports or cultural activities) of the total module hours and the student has no acceptable justification, then this student is withdrawn from that module. If the Dean of the Faculty accepts the justification of absences, then this student is considered ***withdrawn*** without refunding the course fees. A formal process is defined to tackle the problem of any student whose work and attendance appear unsatisfactory. Direct approaches by lecturers to solve the problem are as follows: He may choose to issue an "informal" warning, on a special form which may rectify the situation. If this doesn't work, a "formal" warning is issued. This is again done on another special form. Failure to remedy the situation at this stage leads to dropping the student from the module. A copy of these documents is kept in the student's file.

6. Interruption of the Degree Program

Any interruption (for a maximum of 2 years) of your degree program requires special permission from the Faculty. Regulations state that a B.A. degree is a continuous 5-year period of study. Permission will only be granted if satisfactory reasons are given. A written request with supporting evidence must be presented to the Faculty. Reasons might include prolonged illness. Consult your tutor for advice.

7. Transfer between Departments

- If you are contemplating any change of Faculty or Department, consult your primary tutor as soon as possible.
- You can change your Department by filling a special form at the beginning of the semester. The Tawjihi average required in the new Faculty or Department must be less than or equal to your Tawjihi average. A special committee will determine which courses will be accredited from your current Department.

8. Withdrawal from Modules

If you are contemplating withdrawing from a module, please discuss the situation with your personal tutor at the earliest opportunity.

- You can withdraw from a module up to the thirteenth week of the first or second term, and up to the seventh week of the summer term.
- The minimum number of credit hours (which is 9) required in each term should be followed.

V. Organization of Teaching

An individual course of lectures is known as a "**course unit**" or sometimes as a "**module**".
The curriculum contains modules that are University Requirements (Univ. Reqts.), Faculty Requirements (Facu. Reqts.), and Department Requirements (Dept. Reqts.). Each module has 3 hours per week. However, some modules are supported by tutorials and some continuous assessment, such as seminars or laboratory work, usually amounting to 1 hour per week. When you register for course units, you should follow the academic guidance plan that the Department arranges for you. In fact, you can register any module only if you have taken its prerequisite(s) with the exception that you can register the module and its prerequisite only if you are in the graduation semester.
In each semester, you can register a minimum of 12 credit hours and a maximum of 18 credit hours, except for the semester in which you are expected to graduate when you can register 21 hours. The complete five-years academic guidance plan is listed in **Appendix A** of this report. For more information about module numbering and full module descriptions, see **Appendix B** of this report.

In the **First Year**, you are encouraged to take 18 credit hours each semester (first and second, the summer term is optional). The fourth digit of each course unit code (see **Appendix B**) tells you the year in which the course is offered. During the first 16-week semester, students will normally complete 5 modules. Thus, each teaching week contains 15 hours or more of scheduled work, while the students normally finish 6 modules in the other 16 week semester. In addition, each scheduled hour typically requires two extra hours of unscheduled work (e.g. writing up lecture notes, preparing for a tutorial, finishing off a laboratory exercise etc.). The selection of a University elective module ***(one module)*** depends on your choice. Five of the first year 11 modules are compulsory University requirements; five are Faculty requirements and one elective University requirement module.

In the **Second Year,** the number and size of modules is approximately similar to that of the first year. Tows of the 12 modules of the second year are University requirements, six modules are Faculty requirements, and four modules are compulsory Department requirements.

In the **Third Year,** you take seven modules per semester all of them are compulsory Department requirements. Four of these modules are engineering labs, in each semester there are two of them.

In the **Fourth Year,** the number and size of the modules is approximately similar to that of the third year. There are fifteen compulsory Department requirements modules. One of the compulsory modules is the Graduation Project.

In the **Fifth Year,** there are thirty credit hours remaining, divided as follows: One Faculty requirement module, eleven Department requirements modules; seven of them are compulsory; while the others are elective.

VI. Course Unit Choices

You may choose a course unit (module) if you have already taken all its prerequisite modules with the approval of your personal tutor. **Figure (C-1)** in **Appendix C** depicts the prerequisite relationships between the modules.

An initial choice is made before or at Departmental Registration. After that, changes can be made as follows:

- The deadline for changing modules in each semester is one week after lectures start (three days for the summer term). Normally, no changes of modules will be permitted after these dates except for the withdrawal mentioned in point (8) of the previous section.

- In the first instance, you should discuss any plan to change modules with your personal tutor. You must check that the new module you wish to take is a valid option for your degree program and creates no schedule conflict. If there is conflict, the change is not permitted.

VII. Assessment and Examinations

1. Criteria for Assessing Examination Work

First class (90 – 100 marks). First class answers demonstrate depth of knowledge or problem solving skills, which is beyond that expected from a careful and conscientious understanding of the lecture material. Answers will show that the student

1. has a comprehensive knowledge of a topic (often beyond that covered directly in the program) with an absence of misunderstandings;
2. is able to apply critical analysis and evaluation;
3. can solve unfamiliar problems not drawn directly from lecture material and can adjust problem solving procedures as appropriate to the problem;
4. can set out reasoning and explanation in a logical, incisive and literate style.

Upper Second class (80 – 89 marks). Upper second class answers provide a clear impression of competence and show that the student

1. has a good knowledge base and understanding of all the principal subject matter in the program;
2. can solve familiar problems with ease and can make progress towards the solution of unfamiliar problems;

3. can set out reasoning and explanation in a clear and coherent manner.

Lower Second class (70 – 79 marks). Lower second class answers will address a reasonable part of the question with reasonable competence but may be partially incomplete or incorrect. The answer will provide evidence that the student:

- has a satisfactory knowledge and understanding of the principal subject matter of the program but limited to lecture material and with some errors and omissions;
- can solve familiar problems through application of standard procedures;
- can set out reasoning and explanation which, whilst lacking in directness and clarity of presentation can nevertheless be followed and readily understood.

Third Class (60 – 69 marks). Third class answers will demonstrate some relevant knowledge but may fail to answer the question directly and/or contain significant omissions or incorrect material. Nevertheless, the answer will provide evidence that the student

- has some basic knowledge and a limited understanding of the key aspects of the lecture material;
- can attempt to solve familiar problems albeit inefficiently and with limited success.

Pass (50 – 59 marks). Answers in this category represent the very minimum acceptable standard. Such answers will contain very little appropriate material, major omissions and will be poorly presented lacking in any coherent argument or understanding. However the answer will suggest that the student

- has some familiarity with the general subject area;
- whilst unable to solve problems can at least formulate a problem from information given in a sensible manner.

2. Assessment Regulations

In general, every module is assessed as follows: 60% is given for two 1-hour exams, coursework and/or seminars, projects, or essays, and 40% for the final exam that may be a written exam only or a written exam plus a final laboratory exam (if applicable), final small project, or seminar presentation. The 40% for the final exam is stipulated in the University regulations. The minimum pass mark is 50% for any module, whereas the minimum passing cumulative average in each semester is 60%. Students are placed on academic probation if their cumulative average drops below 60%. In this case, students are encouraged to repeat those modules with low marks in order to increase their cumulative average. However, students will be dismissed from the University if this average is not achieved in the third attempt.

On the other hand, a committee of three staff members, including the supervisor of the project, assesses the graduation project module. The project's assessment

will include the supervisor mark (35%) and the discussion committee mark (65% given as follows: 20% for project presentation, 25% for report writing, and 20% for project discussion).

3. Role of Internal and External Examiners

If many lecturers teach the same module, the main coordinator of such a module plays the role of the internal examiner of that module. All lecturers of this module propose exam questions (for the first, second and final exams). The main coordinator will collect these questions from lecturers and select some of them to include in the exam paper.

On the other hand, external examiners validate the standard of the degree program. The external examiners are expected to look at the question papers, inspect a selection of scripts and project reports (particularly the borderline ones). They supply an assessment report to the Department.

4. Appeal Procedures

If you have good reason to question a mark you have been given (in midterm exams or in coursework), you should in the first instance approach the module lecturer. If the problem is not solved, you must submit it to your primary tutor. He will find the appropriate solution within administrative structures.

Problems with final examinations are resolved by submitting complaints or appeals in writing (within three days of the announcement of examination results) to the Examination Committee of the Department. The examination committee will consider these cases and check if there is any mistake in the summation of the marks and so on.

5. Unfair Practices

The University treats attempting to cheat in examinations severely. The penalty is usually more severe than a zero in the paper concerned. More than one student of this Department was dismissed from the University because of this. Plagiarism, or copying of course or lab work, is also a serious academic offense as explained in the University guidelines.

6. Department Guidelines on Plagiarism

1. Coursework, laboratory exercises, reports and essays submitted for assessment must be your own work, except in the case of group projects where a joint effort is expected and is indicated as such.
2. Unacknowledged direct copying from the work of another person, or the close paraphrasing of somebody else's work, is called plagiarism and is a serious offence, equated with cheating in examinations. This applies to copying both from other students' work and from published sources such as books, reports or journal articles.
3. Use of quotations or data from the work of others is entirely acceptable, and is often very valuable provided that the source of the quotation or data is given.

Failure to provide a source or put quotation marks around material that is quoted gives the appearance that the comments are ostensibly your own. When quoting word-for-word from the work of another person, quotation marks or indenting (setting the quotation in from the margin) must be used and the source of the quoted material must be acknowledged.

4. Paraphrasing, when the original concept is still identifiable and has no acknowledgement, is plagiarism. A close paraphrase of another person's work must have an acknowledgement to the source. It is not acceptable for you to put together unacknowledged passages from the same or from different sources linking these together with a few words or sentences of your own and changing a few words from the original text: this is regarded as over-dependence on other sources, which is a form of plagiarism.
5. Direct quotations from an earlier piece of your own work, if not attributed, suggest that your work is original, when in fact it is not. The direct copying of one's own writings qualifies as plagiarism if the fact that the work has been or is to be presented elsewhere is not acknowledged.
6. Sources of quotations used should be listed in full in a bibliography at the end of your piece of work.
7. Plagiarism is a serious offence and will always result in imposition of a penalty. In deciding upon the penalty the Department will take into account factors such as the year of study, the extent and proportion of the work that has been plagiarized and the apparent intent of the student. The penalties that can be imposed range from a minimum of a zero mark for the work (without allowing resubmission) through warning to disciplinary measures (such as suspension or expulsion).

VIII. Teaching Quality Assurance Committee

The Departmental Teaching Quality Assurance and Enhancement Committee is responsible for the quality of teaching in the Department, including the analysis of Course Evaluation Questionnaire responses.

IX. Student Feedback and Representation

1. Staff Student Consultative Committee

Student representatives are elected onto the departmental staff student committees at the start of each term. All simultaneous sections of a module have a staff student committee. Each committee meets at least three times each semester and may discuss any matter of concern with the module. The staff members of each committee are the lecturers of the concerned sections.

2. Departmental and Deanship Meetings

The meetings held by the Head of the Department and the Dean of the Faculty during term time, mainly have an advisory role, where students may raise their problems that need some concern from these authorized persons. Separate meetings are held for students of each year.

3. Module Evaluation Questionnaires

The Department attaches great importance to the opinion of students on the quality of the teaching provided, and every student is asked to complete a Module Evaluation Questionnaire for each module. The questionnaires are anonymous.

X. Communications

1. Official Notices

Official notices are posted on the notice boards at the Department and at the Faculty. Electronic mail is also used extensively for communication with the Department and University. Each lecturer provides the students with his/her e-mail at the beginning of the term. Most official information including copies of this handbook, the undergraduate syllabus and timetables are available on the University Web pages www.philad.edu.jo. This includes directories of staff and students for internal use, complete with photographs.

2. Electronic Mail

Electronic mail is used widely for administrative purposes within the Department. It is frequently useful for communicating between individuals and small groups (e.g. between a tutor and his/her tutorial group), and occasionally for broadcasting important messages to wider groups. It is important that you know how to use e-mail. It will be covered in the introductory laboratory sessions. The code of practice for computer usage covers electronic mail, Please note the points below:

3. Obscene or Offensive Mail

DO NOT SEND OBSCENE OR OFFENSIVE MAIL. If you receive mail, which you regard as offensive or obscene, you may wish to complain to a staff member so that appropriate disciplinary action can be taken against the offender.

4. Group Mailing

You are strongly discouraged from sending e-mail to groups of people. The newsgroups should be used for this purpose.

5. Miscellaneous Hints

- Be brief in your communications.
- Compose your message as if ALL of your recipients were physically present.
- Limit the distribution of messages to the people who are likely to be interested.

- Keep a copy of the mail you send out, for future reference. Learn to use folders to keep useful messages.
- Read all your incoming mail before replying to any of it. There may be other relevant messages for you to read.
- Be careful when replying to messages. You probably want your reply to go only to original message sender - not to the whole of the distribution list.
- When you reply to a message, it is frequently helpful to include some of the original message to help your recipients to remember and understand the context of the reply.

XI. Curriculum Design, Content and Organization

1. Curriculum Design and Content

The programme is offered to students from the scientific branch that passed their Tawjihi exam with a minimum average of 80%. The programme is normally completed in five years, where the typical American credit hour system is applied. The Department awards the degree upon completion of 160 credit hours. The study is organised into five consecutive levels . Each level is split into two consecutive semesters (first and second) and an optional summer term. All students complete 47 modules 3-credit-hours each, 4 two-cridet-hours modules and 14 modules in one-cridet-hour.

- The 3-credit-hours modules are organised as follows:

24 modules Department compulsory	51.06 %
4 modules Department electives	8.51 %
10 modules Faculty requirements	21.27 %
7 modules University compulsory	21.27 %
1 modules University elective	2.13 %

- The 2-credit-hours modules are rganised as a compulsory Department rquirements.
- The 1-credit-hour modules are organised as follows:

12 modules Department compulsory	85.71 %
2 modules Faculty requirements	14.29 %

Module credit is awarded upon successful completion of the module with a minimum 50% grade.Progression from one level of study to another requires the student to complete all prerequisites of the following year modules, and the cumulative average of grades obtained in the modules studied (whether successful or not) should be at least 60%.

2. Curriculum Organization

Table (1) Areas of Specialization and Number of Modules

	Area	Compulsory Modules (CH)		Elective Modules (CH)		Faculty Requirements (CH)		Total No. of Modules
		No.	(No. /92) %	No.	(No. /12) %	No.	(No. /32) %	
1.	Electric circuits	6	6.52	0	0	0	0	2
2.	Engineering Analysis	12	13.04	0	0	6	18.75	6
3.	Electromagnetic	9	9.78	3	0.25	0	0	4
4.	Computer design and microprocessors	6	6.52	0	0	3	9.375	3
5.	Electrical machines and power	5	5.43	0	0	0	0	2
6.	Measurements	6	6.52	0	0	0	0	2
7.	Communications	10	10.87	0	0	0	0	5
8.	Electronics	12	13.04	3	0.25	0	0	5
9.	Data transmission, communication networks an computer networks	5	5.43	0	0	0	0	2
10.	Engineering applications	9	9.78	30	2.5	0	0	15

4. Curriculum Characteristics

- ***Objectives of the Main University-Required Modules.*** These requirements are to broaden the students' basic skills: languages, computing, and culture.

- ***Objectives of the Main Faculty-Required Modules.*** These requirements are to consolidate mainly the students' background in the basics of the Communications and Electronics, such as mathematics, physics and computing applications.

- ***Objectives of the Main Management Modules in the Curriculum.*** The curriculum is designed so that the basic foundations of Engineering are given in the first two years of study, whereas modules of the next two years allow students to acquire the essential modules.

- ***Objectives of the Training , Special Topics and Graduation Project Modules.*** The objectives of these modules are to allow students to gain practice in problem analysis, design & implementation, report writing, and making presentations.

- ***Identification of Key Stages of Progression in the Curriculum.*** Students are directed to take the 24 hours of university requirement modules and the 21 hours faculty requirement modules in the first two years of study. Students can also choose some modules from the list of electives.

Table (2) shows the distribution of compulsory and elective modules in each specialization area of the curriculum.

Table (2) Compulsory and Elective Modules

I.I.II A – The Compulsory Specialisation Modules	I.I.III C-Faculty Requirements	I.I.IV C- The Elective Specialisation Modules
1. Electric circuits 610211 Electric circuit I 610212 Electric circuit II		
2. Engineering Analysis 650304 Advanced Engineering Analysis 650302 Probability and Random Variables 650331 Signal Analysis and Processing 650534 Digital Signal Processing	*2. Engineering Analysis* 650201 Engineering Analysis I 630202 Engineering Analysis II	
3. Electromagnetic 650241 Electromagnetic I 650341 Electromagnetic II 650541 Antennas and wave propagation 650542 Microwave propagation		*3. Electromagnetic* 650541 Antennas and wave propagation
4. Computer design and microprocessors 650261 Logic Design 630371 Microprocessor	*4.* Computer design and microprocessors 630203 Programming Language	
5. Electrical machines and power 610381 Electrical Machines 610485 Power System Analysis		
6. Measurements 650351 Electronics Instructions and Measurements 650451 automatic Control systems		
7. Communications 650431 Communications I 650432 Communications II 650533 Digital Communications 650535 Optical Communications 650539 Mobile Communications		
8. Electronics 650221 Electronics I 650321 Electronics II 650421 Digital Electronics		*8. Electronics* 650521 Microelectronics
9. Data transmission, communication networks an computer networks 650536 Communications Networks 650463 Computer Networks		
10. Engineering Applications 650325 Engineering Project 650592 Graduation Project I 650590 Graduation Project II 650307 Reversal Engineering		*10. Engineering Applications* 650532 Communications Transmission Systems 650541 Antennas and wave propagations 650544 Radar Engineering 650545 satellite Engineering 650424 Biomedical Electronic Instrumentation 650593 special topics in Communication end Electronics

		650422 Advanced Electronics 650540 Advanced Digital Communications 650523 Cells and Circuits Design VLSI 650511 Network Synthesis and Filters 650528 Television Engineering

4. Innovation in the Curriculum

The curriculum is constantly evolving to cope with new technologies and rapidly developing topics. The curriculum has been revised in 2000, 2003, 2007, 2008 and 2009, 2011.

For example, internal processes, industrial feedback, various benchmarks, and information from other institutions have led to many improvements in the curriculum.

The evaluation of the module is also performed through workshops in curriculum design, typically attended by representatives from Industry and some ex-students. The Department is particularly mindful of the fast technological development and its likely effect on curriculum development. In addition, the Department policies and operations ensure that the staff appraisals are used to identify strengths and weaknesses so that appropriate action can be taken.

XII. Health and Safety at the University

The University has a Health & Safety Committee, which comprises representatives of all services within the University. It is the responsibility of this committee to investigate complaints and potential hazards, to examine the cause of all accidents and to carry out periodic inspections of all areas of the Department. At registration, you will be required to assent to the departmental code of behavior, which relates to health and safety.

1. Buildings

The Department comprises two kinds of buildings: the Rooms Building and the Computer Laboratories.

The buildings are generally open between 08.00 and 19.30 (Sunday – Thursday).

In accordance with University policy, smoking is prohibited throughout all buildings.

2. Emergency Evacuation

It is the responsibility of every individual to familiarize himself with the Department's buildings and be aware of the fire exits.

- After evacuation of any building, please assemble well away from the building, and do not block any exits.
- Do not return to any building until the safety supervisor declares the emergency is over and the buildings are safe.

3. Fire Action

Fire Action notices are located at, or adjacent to, fire alarm actuation points. All staff and students should be acquainted with this routine.

4. Operating the Fire Alarm

The manual fire alarm system can be activated by breaking the glass in the red contact boxes sited at strategic points throughout the premises.

5. Use of Fire Appliances

Fire appliances are sited at strategic points throughout the Department to deal with fires. Fires should only be tackled provided there is no personal danger and after the alarm has been set off.

6. Action when the Alarm Rings

On hearing the intermittent alarm, you should prepare yourself to evacuate the building promptly.

On hearing the continuous alarm, you should evacuate the building immediately by the nearest exit.

7. Personal Difficulties

Please inform the Department's counselors or your tutor of any difficulties with which the Department can be of assistance.

XIII. Course outlines of the Specialized Courses

PHILADELPHIA UNIVERSITY
FACULTY OF ENGINEERING

Communication &Electronics Engineering Department

Course Description
(English & Arabic)

2016-2017

جامعة فيلادلفيا
كلية الهندسة
قسم هندسة الاتصالات والالكترونيات
وصف المواد
(عربي و انجليزي)

650260 Engineering Analysis (1)

Basic Concepts and ideas, First Order Differential Equations. Second and higher order Differential Equations, Power Series Method, Laplace Transform.

Pre-request: Calculus 2 (250102)

تحليل هندسي (1) (650260)

المعادلات التفاضلية والنمذجة، حل المعادلات التفاضلية الخطية وغير الخطية، نمذجة النظم الميكانيكية والكهربائية، تحويل لابلاس، حل المعادلات التفاضلية بإستخدام المتتاليات، حل المعادلات التفاضلية ذات القيم الإبتدائية، مقدمة إلى المعادلات التفاضلية الجزئية.

المتطلب السابق: رياضيات 2 250102

650242 Electronics (1)

Semiconductor Diode Circuit Analysis, Semiconductor Diodes Rectifiers, Zener Diodes, Clippers, Clampers. Bipolar Junction Transistor (BJT), Models Biasing Circuits. Common Emitter Amplifier. Common Collector Amplifier. Common base Amplifier. Design of BJT Amplifier. Field effect Transistor (FET) & MOSFET, Operation. Biasing and FET Amplifiers. Design of FET Amplifier. Introduction to O.P.AMP & its Applications.

Pre-request: Basics of Electronics 650240

الكترونيات(1) (650242)

تحليل دوائر الثنائي Pn، دوائر التقويم نصف موجة وكامل الموجة، ثنائي زنير، ودوائر التقليم والالزام. ترانزستور ثنائي الوصلة (BJT) خواصه و نمذجته ، دوائر الإنحياز، مكبر باعث مشترك، مكبر قاعدة مشتركة، مكبر جامع مشترك تصميم دوائر التكبير نوع BJT. ترانزستور تأثير المجال (FET) نوع الوصل (JFET) والنوع المعزول (MOSFET) ، خواصه عمله ودوائر الإنحياز. مكبرات نوع JFET ، تصميم دوائر التكبير نوع (JFET) مقدمة إلى مكبر العمليات (OP-Amp) وتطبيقاته.

0650240 المتطلب السابق: أساسيات الالكترونيات

650364 Probability & Random Variables

Set Definition, One Random Variable, Operations on One Random Variable, Multiple Random Variables, and Operation on Multiple Random Variables, Random Process, Spectral Analysis of Random Signals, and Linear Systems with Random Signal input.

Pre-request: Signal Analysis & Processing 650320

الإحتمالات والمتغيرات العشوائية (650364)

تعريف المجموعات، متغير عشوائي واحد، العمليات على المتغير العشوائي الواحد، متغير عشوائي متعدد، العمليات على المتغير العشوائي المتعدد، العملية العشوائية، التحليل الطيفي للمتغير العشوائي. الانظمة الخطية والمتغير العشوائي.

المتطلب السابق:تحليل ومعالجة اشارات 650320

650163 Basics Engineering Analysis

Complex Functions. Mapping. Integration in the Complex Plane. Taylor and Laurent Expansion. Singularities and the Residue Theorem. Eigenvalues and Eigenvectors.

Pre-request: Calculus (2) 250102

أساسيات التحليل هندسي (650163)

), التكاملات في المستويات المركبة, متواليات تيلر ولورنت, المفردات Mappingالدوال المركبة – التحويلات (
) ونظرية المتبقيات, قيم الخصائص ومتجهات الخصائص.Singularities(

المتطلب السابق:رياضيات2 50102 2

650342 Electronics (2)

Multistage Amplifier Analysis , Power Amplifiers Classes (A,B,AB,C) , Darlington Pair, Amplifier Frequency Response (Low & High Frequency Responses) , Ideal Operational Amplifier, Differential Amplifiers, Operational Amplifier as Integrated Circuits, Practical Operational Amplifier, Feedback and Oscillators.

Pre-request: Electronics (1) 650242

الكترونيات 2 (650342)

)، ترانسستور دارلنكتون الإستجابة الترددية للمكبر في A،B،AB،Cتحليل دوائر التكبير متعددة المراحل، مكبرات القدرة (الترددات العالية والواطئة, مكبر العمليات المثالي، المكبر التفاضلي، تطبيقات مكبر العمليات، التغذية العكسية والمذبذبات.

المتطلب السابق:الكترونيات (1) 650242

650320 Signal and Systems

Continuous- Time Signals , Discrete- Time Signals, Continuous and Discrete – Time Convolution , Linear Time – Invariant Systems, System Attributes, Differential and difference equations, Fourier series , Continuous- Time Fourier Transform, Properties of Fourier Transform, Laplace Transform, Region of Convergence, Properties of Laplace Transform.

Pre-request: Basics of Engineering Analysis 650163

الأنظمة والاشارات (650320)

الإشارات الزمنية المتصلة والمتقطعة، الالتفاف، الأنظمة الخطية، خصائص الأنظمة، المعادلات التفاضلية والفرقية، متسلسلة فوريير، تحويل فوريير، تحويل لابلاس، خصائص تحويل فوريير ولا بالاس.

المتطلب السابق: أساسيات التحليل الهندسي 650163

650312 Electromagnetics(2)

Waves & Applications- Maxwell's Equations. Electromagnetic Wave Propagation.
Power & Pointing Vectors. Reflection of a Plane Wave at normal Incidence. Transmission Lines (TL). Waveguides. Basic Antennas.

Pre-request: Electromagnetics(1) 610213

كهرومغناطيسية (2) (650312)

الموجات وتطبيقاتها-معادلات ماكسويل, انتشار الموجات الكهرومغناطيسية, متجهات الطاقة والإشارة, انعكاس الموجات المستوية على الحادث الطبيعي, خطوط النقل, ناقلات الموجة, أساسيات الهوائيات.

المتطلب السابق:كهرومغناطيسية (1)610213

650344 Digital Electronics

Digital signals and systems , semiconductor diodes and transistors, logic technologies and families, Interfacing, memory elements and types , programmable logic devices, A/D converter and D/A converter, visual displays.

Pre-request: Logic Circuits Design & Electronics(1) 630211&650242

الإلكترونيات الرقمية (650344)

الأنظمة والاشارات الرقمية, الثنائيات أنصاف النواقل والترانزيستورات, العوائل والتقنيات المنطقية, الربط والملاءمة, أنماط وعناصر الذاكرة, الأدوات المنطقية المبرمجة, المحولات التشابهية – الرقمية والرقمية, التشابهية, المظهرات المرئية.

630211&650242 المتطلب السابق:تصميم دوائر منطق و الكترونيات (1)

650420 Analog Communications

Modulation Process, Continuous - Wave (CW) Modulation (AM, FM, PM), Frequency Division Multiplexing, Noise in AM and FM receivers, Sampling Theorem, Pulse Amplitude Modulation (PAM).

Pre-request: Probability and Random Variables 650364

اتصالات تشابهية (650420)

عملية التعديل، التعديل المستمر للموجة(التعديل السعوي، التعديل الترددي والتعديل الطوري)، الضجيج في مستقبلات التعديل المستمر، نظرية أخذ العيناتس، التعديل النبضي.

المتطلب السابق:احتمالات ومتغيرات عشوائية 650364

650522Communication and Computer Networking systems

Basic Computer Network Computer Network Components. Open System interconnection. Error Detection and Correction .Digital Data Transmission Transmission Media. Data Link Control Protocols. LAN. MAN. Introduction to Communication Networks. Communication Networks Switching Techniques. TCP IP Suite. Wireless Communication Technology. Wireless LANs. Bluetooth.

Pre-request: Digital Communications 650425

نظم شبكات الاتصالات والحواسيب (650522)

مبادئ شبكات الحاسوب، مكونات شبكة الحاسوب، ترابط الأنظمة المفتوحة, إكتشاف وتصحيح الأخطاء، بث المعلومات الرقمية, وسائط البث (النقل) بروتوكولات التحكم بمعلومات التوصيل, الشكبات المنطقية والمحلية.

مقدمة إلى شبكات الاتصال اللاسلكية. مفهوم شبكات الاتصال. تقنيات نقل المعلومات (بروتوكول الانترنت)، (بروتوكول التحكم بالإرسال), الاتصالات الفضائية، الاتصالات المتنقلة (بروتوكول التطبيقات اللاسلكية)، (بروتوكول الإنترنت المتنقل) اللاسلكي، بلوتوث

المتطلب السابق: اتصالات رقمية 650425

650447 Microelectronics

Introduction, Digital Electronics Characterization, CMOS Logic Design, MOS Modeling & Design, Very Large Scale Integration Systems. Integrated- Circuit Fabrication, Field Programmable gate Arrays.

Pre-request :Digital Electronics 650344

الكترونيات دقيقة (650447)

. النمذجة والتصميم باستخدام CMOSمقدمة. خصائص الالكترونيات الرقمية. التصميم المنطقي باستخدام تقنية). تصنيع الدراة المتكاملة. مصفوفات البوابات المبرمجة VLSI. الأنظمة المتكاملة ذات التدرج الواسع جدا (MOSتقنية حقليا FPGAs.

المتطلب السابق:الكترونيات رقمية 650344

650526 Communication Circuits

Radio Frequency Amplifier. Oscillators. Modulation & AM Modulation Systems. AM Transmitter Circuit. AM Receiver Circuit. Frequency Modulations, FM transmitter Circuit, FM Receiver Circuit. PLL in Communication Application.

Pre-request: Analog Communications and (650420)

دوائر الاتصالات (650526)

مكبرات الترددات الراديوية، المذبذبات عالية التردد، التضمين ونظم التضمين، دوائر بث التضمين السعوي، دوائر استقبال التضمين السعوي، التضمين الترددي ، دوائر بث واستقبال التضمين الترددي، دوائر الاقفال الطوري وتطبيقاتها PLL.

المتطلب السابق:اتصالات تشابهية 650420

650527 Communication Transmission Systems

Introduction to Communication Systems & Transmission Media, Multiplexing Techniques, Propagation of RF Waves, Microwave Comm. Systems, Satellite Comm. Sys. , Satellite Multiple – Access Arrangements, Telephony & Telephone Networks.

Pre-request: Digital Communication 650425

نظم النقل في الاتصالات (650527)

مقدمة في أنظم الاتصالات، وسائط النقل، تقنيات تضاعف الاشارة، إنتشار الموجات الراديوية، أنظمة الاتصالات المايكروية، أنظمة الاتصالات عبر الأقمار الصناعية، ترتيبات وصول الإشارة للأقمار الصناعية التلفون وشبكات التلفون.

المتطلب السابق:اتصالات رقمية 650425

650425 Digital Communications

Pulse – Code Modulation, TDM, Deferential PCM, Matched Filter, Intersymbol Interference, Base band M–ARY.PAM Transmission, Geometric Representation of Signals. Correlation Receiver, Digital Modulation Techniques (ASK, FSK, PSK, DPSK and M-ARY) Effect of Noise on Digital Modulation Signals.

Pre-request: Analog Communications 650420

اتصالات رقمية (650425)

التعديل النبضي المرمز، التقسيم الزمني المتعدد، مرشحات الموائمة، تداخلات ومعوقات الاشارات الرقمية، النقل بإستخدام التعديل المطالي النبضي بواسطة مصفوفة الحزمة الأساسية، مستقبل الاشارات الرقمية المترابطة، تقنيات التعديل الرقمي، تأثير الضجيج على إشارات التعديل الرقمي.

المتطلب السابق:اتصالات تشابهية 650420

650322 Digital Signal Processing

Signals and Systems in Discrete Time. Discrete and Fast Fourier transform (FFT). The Z-Transform. Design Techniques for Digital Filters. FIR, IIR Recursive and non Recursive Filters. Applications.

Pre-request: -Signal and Systems 650320

معالجة الاشارة الرقمية (650322)

, طرق التصميم للمرشح الرقمي, Zالإشارة والأنظمة المتقطعة زمنيا, تحويلات فوريير المتقطعة والسريعة, تحويلات مرشحات الاستجابة المحددة، الإستجابة غير المحدودة، الإسترجاعية وغير الإسترجاعية, تطبيقات.

المتطلب السابق:الاشارات و الانظمة 0650320

650445 Optical Communications

Fiber Optic Communication System, Optic Review and Light Wave, Optic Fiber Wave Guides, Light Sources, Light Detectors, Fiber Components, Modulation and Application, System Design.

Pre-request: Analog Communications 650420

الاتصالات الضوئية (650445)

منظومة الاتصالات الضوئية بإستخدام الألياف البصرية. مراجعة البصريات والموجه الضوئية دلائل الموجة الضوئية في الألياف البصرية. مصادر وكواشف الضوء. مكونات الليف البصري. التعديل وتطبيقاته في الاتصالات الضوئية. تصميم منظومة رقمية وتشابهية.

المتطلب السابق:اتصالات تشابهية 650420

650520 Mobile Communications

Introduction. Cellular Concept. Coverage Principle. Frequency reuse, Multichannel and Cochannel scheme. Interference: Cochannel and Adjacent Channel. Fading. Models and Prediction of the Median Path Loss. Modulation Techniques. Mobile Communication System: Analog and digital cellular phones (AMPS, GSM….etc). Private and public Access mobile radio. Radio Paging.

Pre-request: Digital Communication 650425

اتصالات متنقلة (650520)

مقدمة, نظرية الخلايا الهندسية, مبدأ التغطية, إعادة استعمال التردد, فكرة القنوات المتعددة والمتشابهة, التداخل: تداخل القنوات المتشابهة والمتجاورة, الاضمحلال: النمذجة والتنبؤ بمتوسط فقد المسار, تقنيات التضمين, أنظمة), أنظمة الراديو (الهواتف) العامة والشخصية, هاتف GSM،AMPSالاتصالات المتنقلة: الهواتف الخلوية التناظرية والرقمية ( ).Pagerرسالة الصفحة (

المتطلب السابق:اتصالات رقمية 650425

650427 Antenna and Microwave Engineering

Maxwell's Equations & Boundary Conditions. Transmission Lines Theory. Waveguides & Resonant Cavities. Microwave Passive Devices. Periodic Structures & Microwave Filters. Microwave tubes & Electronics. Physical Principles of Radiation. Antenna Parameters. Dipole, Monopole, and Loop Antennas. Antenna Arrays. Reflector Antenna. Antenna Synthesis.

Pre-request :Electromagnetic(2) + Analog Communications 650312+650420

)427هندسة الهوائيات وانتشار الموجات (650

مراجعة معادلات ماكسويل، الشروط الحدية، خطوط النقل، دلائل الموجة والتجاويف الرنينية، أجهزة الموجات المايكروية الخاملة، التركيب الدوري ومرشحات الموجات المايكروية.

) والحلقية, أحداثيات Dipole & Monopole المبادئ الفيزيائية للإشعاع, بارمترات الهوائي, هوائيات أحادية وثنائية القطب (الهوائي, عاكس الهوائي, تجميع الهوائيات.

المتطلب السابق:كهرومغناطيسية (2) و اتصالات تشابهية650420+650312

Electrical Circuits (1) (610211)

Definitions and units, basic concepts(Charge, Current, Voltage, &Power Energy), circuit elements (independent and dependent voltage and current sources), KVL and KCL, mesh and nodal circuit analysis, network theorem, transient analysis of RL, RC, and RLC circuits, introduction to AC circuits.

Pre-request: Applied Physics 211104

دوائر كهربائية (1)

تعريفات، مفاهيم أساسية، الشحنة والتيار، الجهد والطاقة، القدرة، عناصر الدائرة الكهربائية، قوانين كيرشوف، طرق تحليل الدوائر الكهربائية، نظريات الشبكة الكهربائية، تحليل دوائر الاستجابة العابرة، مقدمة لدوائر التيار المتردد.

المتطلب السابق:فيزياء تطبيقية 211104

Electrical Circuits (2) (610212)

Periodic waveforms, AC response of RL, RC, and RLC circuits, phasor analysis, impedance concept, resonance, steady-state analysis of AC circuits, coupled circuits, three phase-circuits, Fourier analysis, Laplace analysis, two-port networks, and circuit analysis using computers.

Pre-request: Electrical Circuits (1) 610211

دوائر كهربائية (2)

الأمواج الدورية، تجارب دوائر المكثف و المقاومة و المحثات للتيار المتردد، تحليل الطور، مفهوم الممانعة، الرنين، تحليل الدوائر المترابطة، شبكات الأطوار الثلاثية، تحليل فورير و تحليل لابلاس، تحليل الدوائر باستخدام الحاسوب، الشبكات ذات المدخلين.

المتطلب السابق: *610211 دوائر كهربائية (1)*

Electrical Circuits Lab 610216

DC circuits, KVL and KCL, mesh and nodal circuit analysis, network theorems, transient analysis of RL, RC, and RLC circuits, and AC circuit analysis.

Pre-request: Electrical Circuits (2) 610212

مختبر دوائر كهربائية

تجارب تتضمن: دوائر التيار المباشر، قوانين كيرشوف، نظريات الشبكات، مفاهيم الممانعة، قياس القدرة.

المتطلب السابق: *610212 دوائر كهربائية (2)*

Instrumentation and Measurements 650346

Deals with measurements and errors, units and standards, analog meters, potentiometers, DC and AC bridge instruments, transformers, electronics measuring instruments, oscilloscope, frequency and phase measurements and transducers.

Pre-request: Electronics(2) + Electronics Lab (1), 650342 + 0650343

أجهزة قياس الالكترونية 650346

القياسات و الأخطاء، الوحدات و المعايير، المقاييس المتشابهة، القنطرة المترية، جسور التيارات المترددة والمباشرة، المحولات، الات القياس الالكترونية، المترددات، أجهزة قياس التردد والطور، قياس الازاحة ودرجة الحرارة والقياسات الضوئية.

المتطلب السابق: مختبر الكترونيات (1) + *650342* + 0650343 , *الكترونيات(2)+*

Automatic Control 610414

Introduction to feed back systems, review of system equations, block diagrams and signal flow graphs, system time response and closed loop performance, Routh's stability criterion, the root locus method, frequency methods, compensation techniques, and introduction to sampled control systems.

Pre-request: Instrumentation and Measurements 650346

تحكم الي 610414

مقدمة لنظم التغذية الراجعة العكسية، مراجعة لمعادلات النظم، الاستجابة الزمنية للنظم وأداء المسار المغلق، قاعدة ثبات روث، طريقة الاشارة، اساليب التعويض، مقدمة في نظم التحكم، نظم التحكم باستخدام المعالج الدقيق.

المتطلب السابق:أجهزة قياس 650346

Power System 610411

System representation, per-unit power system components, generators(sequence networks, transient performance, operating limits), constants, design, insulation, steady-state and transient operational problems, crona discharge, symmetrical and asymmetrical fault analysis, principles of power system protection, and computer applications (load flow).

Pre-request: Electromagnetics 1, 0650213

القوى الكهربائية 610411

تمثيل النظام، نظام لكل وحدة، أجزاء نظام الطاقة، المولدات (شبكات التتابع، الاستجابة العابرة، وحدود التشغيل)، محولات الطاقة، خطوط النقل، تحليلات الاخطاء:المتماثلة وغير المتماثلة.

المتطلب السابق:كهرومغناطيسة 1 0650213

Engineering drawing 620131

Instruments and their use, graphic geometry, lettering, orthographic and isometric drawing and sketching, sectional views, introduction to descriptive geometry, surface intersections and developments, and computer (ACAD).

رسم هندسي 620131

أدوات الرسم و استخداماتها، الرسم الهندسي، الحروف، الرسم المتعامد و الرسم المنظور، الرسوم المقطوعية، مقدمة في الرسم الوصفي، تقاطع السطوح، الرسم باستخدام الكمبيوتر(ACAD.)

Logic circuits 630211

Deals with number systems (binary, octal, decimal, hexadecimal), Boolean variables and algebra minimization of Boolean functions, combinational circuits with MSI components, sequential circuits analysis and design, MSI counters and registers, memories, and introduction to computers.

Pre-request: Programming language 630263

دوائر المنطق 630211

نظم الترقيم، جبر بوليان، القيم الصغرى لاقترانات بوليان، دوائر المنطق المتوافقة، تصميم و تحوبل الدوائر التتابعية، السجلات و العدادات، الذاكرة، مقدمة إلى الحاسبات.

المتطلب السابق:لغة برمجة 630263

Microprocessors 630313

Introduction to microprocessor architecture, addressing modes, data movement instruction, arithmetic logic instructions, program control instructions, microprocessor programming, introduction to microprocessor interfacing.

Pre-request: Logic circuits 630211

معالجات دقيقة 630313

مدخل إلى المعالجات الدقيقة، معمارية المعالجات الدقيقة، عمل المعالجات الدقيقة، طرق العنونة، إيعازات نقل المعلومات، الإيعازات الحسابية و المنطقية، إيعازات التحكم، برمجة المعالجات الدقيقة بلغة التجميع، مقدمة إلى تعشيق المعالجات الدقيقة.

المتطلب السابق:دوائر المنطق 630211

Electromagnetics (1) 610213

Vector analysis and vector calculus, coordinate systems and transformation, electric field due to point, line surface, volume charge, electric flux density, Gauss law and divergence theorem, boundary conditions, capacitor, energy capacitance and electric stored energy, electrostatic boundary value problem, steady electric current, conductivity and magnetic stored energy, Ohm's law, KCL, Biot-Savant law and magneto static fields, magnetic flux density, Ampair's law and Stock's theorem, magnetic vector potential, inductance and energy, ferromagnetic material and the magnetic circuits, introduction to time varying fields.

Pre-request: Engineering Analysis (1) 650201+Basics of Engineering Analysis 650163

كهرومغناطيسية (1) 610213

عمليات المتجهات ونظم المحاور، المجال الكهربائي لشحنات نقطية وخطية وسطحية، كثافة الفيض الكهربائي، قانون بيوت سافارت ، كثافة الفيض المغناطيسي، نظرية ستوك وقانون امبير، جهد المتجه المغناطيسي، الحث والطاقة، الدوائر والمواد المغناطيسية، مقدمة للمجالات المتغيرة مع الزمن.

المتطلب السابق:تحليل هندسي (1)650201+اسس التحليل الهندسي 650163

Electronics (1) Lab 650343

Diode characteristics, half and full wave rectifiers, diode appl. Circuits, voltage doubler, clamper (zener diodes appl.), transistor characteristics, BJT and FET, small signal analysis of CB, CC and CD amplifiers.

Pre-request: Electronics (1) 650242

مختبر الكترونيات (1) 650343

تجارب تتضمن خصائص الصمام الثنائي، تطبيقات على الصمام الثنائي، تطبيقات على الصمام الثنائي، تطبيقات صمام (زينر) الثنائي، خواص الترانزستور، تحليل الاشارات الصغيرة باستخدام المضخمات المختلفة.

المتطلب السابق:الكترونيات (1) 650242

Electronics (2) Lab 650345

Frequency response of EC, CB, CC, CS, and CD amplifiers, RC-coupled amplifiers, multi-stage amplifiers, differential amplifiers, operational amplifiers and oscillators.

Pre-request: Electronics (1) Lab 650343+Electronics (2) 650342

مختبر الكترونيات (2) 650345

تجارب تتضمن:الاستجابة الترددية للمضخمات المختلفة، المضخمات المرتبطة، المضخمات ذات المراحل المتعددة، مضخم العمليات، المضخم المفاضل.

المتطلب السابق : مختبر الكترونيات (1) 650343+الكترونيات (2) 650342

Digital Electronics Lab 650347

Transistors as switching devices, RTL, CMOS logic circuits, TTL and CMOS characteristics, monostable and astable multivibrators, timing circuits, waveform shaping circuits, and A/D and D/A circuits.

Pre-request: Digital Electronics 650344

مختبر إلكترونيات رقمية 650347

تجارب تتضمن: الترانزستور و أدوات التحويل، دوائر المنطق الأساسية، الدوائر المؤقتة، دوائر تشكيل الأمواج، دوائر التحويل من نظام رقمي إلى نظام تناظري و بالعكس.

المتطلب السابق:الكترونيات رقمية 650344

Communication Lab 650428

Signal analysis, filters, AM and FM modulators and demodulators, oscillators, amplifiers, demodulators and filter circuits, signal analysis and modulated waves, and analysis using Fourier transform.

Pre-request: Analog Communication 650420

مختبر اتصالات 650428

تجارب تتضمن تحليل الاشارة، المصفيات، التعديلات و تشمل تعديل FM و AM، المذبذبات، المكبرات، دوائر المعدلات، و المرشحات، تحليل الاشارات و الاشارات المعدلة باستخدام تحويل فورير.

المتطلب السابق:اتصالات تشابهية 650420

Measurements lab 650446

Sensitivity of Wheatstone bridge, Wien bridge, capacitance measurement, FM-instrumentation for capacitive and inductive transducers, strain-gage, thermistors, platinum thermometers, temperature control, photodiodes, photovoltaic cells, and spectral and polar responses of phototransducers.

Pre-request: Electronic measurement and instrumentation 0650346

مختبرأجهزة القياس الالكترونية 650446

حساسية قنطرة هويستون، قنطرة فين، قياس المكثفات، أجهزة القياس ذات التعديل في التردد المستخدمة مع المحولات السعوية الحثية، مقياس الانفعال، الثيرميتر و الترموميتر البلاتيني، التحكم في درجة الحرارة، الصمام الضوئي الثنائي و الخلية الضوئية لتوليد الجهد، استجابة المحولات الضوئية للأشعة الضوئية عند اختلاف اللون و زاوية سقوط الضوء.

المتطلب السابق: اجهزة القياس الالكترونية 0650345

Digital Communication Lab 650524

To emphasizes experiments in digital communication: baseband and pulse slopping, ASK, FSK, PSK, and QPSK.

Pre-request: Digital Communication 650425

مختبر اتصالات رقمية 650524

تجارب تتضمن الاتصالات الرقمية: الاشارات الاساسية وميول النبضة، QPSK, FSK, PSK, ASK.

*المتطلب السابق: اتصالات رقمية*650525

Antenna and Microwave Engineering Lab 650525

Basic antenna directives, antenna wavelength and frequency measurement of microwave power and voltage, standing wave ratio, waveguide attenuation and detector characteristics, microwave tuners and measurement of impedance, directional couplers, series and shunt tees, horn antenna measurements, propagation f microwave, and reflection loss within waveguides.

Pre-request: Antenna and Microwave Engineering 0650427