

المركز الوطني للتقويم والاعتماد الاكاديمي National Center for Academic Accreditation and Evaluation

# ATTACHMENT 5.

# T6. COURSE SPECIFICATIONS (CS)



## **Course Specifications**

| Institution:University of Tabuk Date: 18-4-2019 |  |  |  |  |  |
|---|--|--|--|--|--|
| College/Department : Physics, science           |  |  |  |  |  |
| A. Course Identification and General            | Information                                      |  |  |  |  |
| 1. Course title and code: statistical, PHYS 251 |  |  |  |  |  |
| 2. Credit hours:4 hours                         |  |  |  |  |  |
| 3. Program(s) in which the course is of         | fered.   |  |  |  |  |
| (If general elective available in many p        | rograms indicate this rather than list programs) |  |  |  |  |
| 4. Name of faculty member responsible           | e for the courseDrAhmed Ali Darwish              |  |  |  |  |
| 5. Level/year at which this course is of        | fered:4, year 2                                  |  |  |  |  |
| 6. Pre-requisites for this course (if any)      | ):MATH200  |  |  |  |  |
|   |  |  |  |  |  |
| 7. Co-requisites for this course (if any)       | :  |  |  |  |  |
| 8. Location if not on main campus:              |  |  |  |  |  |
| On main campus                                  |  |  |  |  |  |
| 9. Mode of Instruction (mark all that ap        | oply):   |  |  |  |  |
| a. traditional classroom                        | x80%   |  |  |  |  |
| b. blended (traditional and online)             | What percentage?                                 |  |  |  |  |
| c. e-learning                                   | x What percentage? 20%                           |  |  |  |  |
| d. correspondence                               | What percentage?                                 |  |  |  |  |
| f. other  | What percentage?                                 |  |  |  |  |
| Comments:                                       |  |  |  |  |  |
|   |  |  |  |  |  |

Course Specifications, Ramadan 1438H, June 2017.



#### **B** Objectives

1. What is the main purpose for this course?

The course is designed such that the students come across with the fundamental mathematical concepts and techniques used in nearly all branches of physics.

- 2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)
- Teaching material in a lectures or power point available to students
- □ Increased use of electronic based reference material.
- Content following the most recent research in the field
- □ Some of the topics are planned to be added to related modules
- Use of recent illustrating overhead projectors, electronic screen in teaching
- Tutorials are improved from questions asking to discussion of Electric circuit

#### C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

| List of Topics  | No of | Contact hours |
|---|-------|---------------|
|   | Weeks |               |
| Vector analysis, gradient, divergence, curl; Gauss' and Stokes'         |       |               |
| theorems – examples and problems  | 3     | 12            |
| curvilinear coordinates – examples and problems                         | 1     | 4             |
| Elements of complex algebra, De Moivre's theorem – examples and         | 3     | 12            |
| problems  |       |               |
| Revision+ First Exam  | 1     | 4             |
|   |       |               |
| Matrices, determinant and their important algebraic properties –        | 2     | 8             |
| examples and problems   |       |               |
| Ordinary differential equations of first and second order with constant | 3     | 12            |
| and variable coefficients – examples and problems                       |       |               |
|   |       |               |
| Revision+ Second Exam   | 1     | 4             |
|   |       |               |
| Revision:Examples and problems  | 1     | 4             |



| Final | exam |
|-------|------|
|-------|------|

| 2. Course components (total contact hours and credits per semester): |  |   |   |  |   |  |  |
|--|--|---|---|--|---|--|--|
|  |  |   |   |  |   |  |  |
|  |  |   |   |  | [   | 1  |  |
|  | Lecture  | Tutorial  | Laboratory/   | Practical  | Other   | Total  |  |
|  | Lecture  | Tutoriai  | Studio  | Tactical   | Other.  | Total  |  |
| Planed   | 45 hr  |   |   |  |   | 45 hr  |  |
| Actual   | 45 hr  |   |   |  |   | 45 hr  |  |
| Planed   | 45 hr  |   |   |  |   | 45 hr  |  |
| Actual   | 45 hr  |   |   |  |   | 45 hr  |  |
|  | Omponent<br>Planed<br>Actual<br>Planed<br>Actual | omponents (total contaLecturePlaned45 hrActual45 hrPlaned45 hrActual45 hr | omponents (total contact hours andLectureTutorialPlaned45 hrActual45 hrPlaned45 hrActual45 hr | omponents (total contact hours and credits per semLectureTutorialLaboratory/<br>StudioPlaned45 hr-Actual45 hr-Planed45 hr-Actual45 hr-Actual45 hr- | omponents (total contact hours and credits per semester):LectureTutorialLaboratory/<br>StudioPracticalPlaned45 hrActual45 hrPlaned45 hrActual45 hrActual45 hr | omponents (total contact hours and credits per semester):LectureTutorialLaboratory/<br>StudioPracticalOther:Planed45 hrActual45 hrPlaned45 hrActual45 hrActual45 hrActual45 hr |  |

3. Additional private study/learning hours expected for students per week. 12 hr

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

#### On the table below are the five NQF Learning Domains, numbered in the left column.

**First**, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

| Code | NQF Learning Domains   | Course Teaching   | Course Assessment   |
|------|--|---|---|
| #    | And Course Learning Outcomes   | Strategies  | Methods   |
| 1.0  | Knowledge  |   |   |
| 1.1  | Understanding the mathematical concepts and<br>techniques applied in physics | <ul> <li>Introductory lecture<br/>about the significance<br/>of the course and the<br/>topics to be covered.</li> <li>Students are assigned<br/>home work problems</li> <li>Classroom tutorial<br/>discussions in solving<br/>selected home assigned<br/>problems from each<br/>text book chapter.</li> <li>On-line web-based<br/>learning</li> </ul> | <ul> <li>Class work<br/>including short<br/>quizzes (10%)</li> <li>Student's<br/>participation,<br/>homework assigned<br/>questions, and<br/>evaluation (10%)</li> <li>Two midterm tests<br/>(20% each)</li> <li>Final examination<br/>(40%)</li> </ul> |



| 2.0 | Cognitive Skills  |   |   |  |  |  |
|-----|---|---|---|--|--|--|
| 2.1 | To solve problems<br>- Using discussion, Lessons, examples and  | <ul> <li>Encourage students<br/>to use computer<br/>technology and<br/>internet to get access to<br/>the course material.</li> <li>Link between<br/>theoretical and<br/>appliedknowledge.</li> <li>-</li> </ul> | <ul> <li>Individual home<br/>work problems and<br/>assignment tasks</li> <li>Group and<br/>individual<br/>assignment tasks</li> </ul> |  |  |  |
| 2.2 | - Importance of mathematical physics  | Open discussion<br>amongst students<br>under the supervision<br>of the instructor<br>- Communicate and<br>make discussions with<br>students in English<br>language.   | - Students are<br>encouraged to<br>understand<br>problems rather<br>than just<br>memorizing various<br>problems type.                 |  |  |  |
| 2.3 | illustrations to demonstrate the difference among<br>topics<br>- Relation between mathematical physics and other<br>physics courses | <ul> <li>Encouraging group<br/>discussion related to<br/>the subject matter.</li> <li>Students are<br/>encouraged to read of<br/>the assigned materials<br/>before each class.</li> </ul>                       | - Performance in the<br>class and in the<br>exams   |  |  |  |
| 2.4 | <ul> <li>Encourage students to use online library</li> <li>Urge students for self-learning</li> </ul>                               | - Taking feedback after<br>completion of every<br>chapter to identify the<br>weak areas.  | - Regular attendance<br>in the class  |  |  |  |
| 3.0 | Interpersonal Skills & Responsibility   |   |   |  |  |  |
| 3.1 | Directing the student to self-learning and greater knowledge in the field of course -Tutorial Classes.                              | Solving problems in groups during tutorial  | Quizzes and exams   |  |  |  |
| 3.2 | Encourage students to think critically and involve in discussions with the instructor in classroom.                                 | Give students projects<br>on topics related to the<br>subject   | Quizzes and exams   |  |  |  |
| 3.3 | Oral presentations on related topics will be held in class weekly   | Give students critical thinking questions   | Grading homework assignments  |  |  |  |
|     | Work independently and as part of a team.   | Encouraging students to<br>communicate among<br>themselves under<br>instructor guidance.  | Regular attendance  |  |  |  |
| 4.0 | Communication, Information Technology, Numerica   | al  |   |  |  |  |
| 4.1 | Develop the scientific language skills  | To use computer<br>technology to get<br>access to the course<br>material.   | Marks for student's<br>presentation using<br>power point  |  |  |  |



| 4.2 | - Develop communication skills with others via websites or e-mail   | Using simple language<br>while conducting<br>lessons | Giving students<br>practical skills<br>necessary to<br>implement the<br>laboratory activities. |
|-----|---|--|--|
| 5.0 | Psychomotor   |  |  |
| 5.1 | Description of the psychomotor skills to be<br>developed and the level of performance<br>Explain the different theories to solve and<br>analyze the circuit |  |  |
| 5.2 | acquire the skills crisis for electronic circuits science.  |  |  |
| 5.3 | Student must be ambitious enough to construct design electronic circuits.   |  |  |

## 5. Schedule of Assessment Tasks for Students During the Semester

|   | Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.) | Week Due         | Proportion of Total<br>Assessment |  |  |  |
|---|---|------------------|-----------------------------------|--|--|--|
| 1 | Student's participation, homework assigned questions, and evaluation                                      | All the semester | 10%                               |  |  |  |
| 2 | - Two midterm tests   | 7 and 11         | 25%                               |  |  |  |
| 3 | - Final examination (40%).  | 16               | 40%                               |  |  |  |

#### **D. Student Academic Counseling and Support**

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- Students can approach during the office hours for the faculty member to ask questions to clarify some points missed during the lecture.

- Students can communicate with the teaching staff through the website and ask questions related to all aspects of the lesson. The students will get written answers as soon as possible, The teaching staff are available during all the day in the faculty and are ready to clarify any points related to the course.

- The teaching staff are available during all the day, where they are ready to clarify any points related to the course.

#### **E Learning Resources**

1. Required Text(s):

Charlie Harper:Introduction to Mathematical Physics

#### 2. Essential References



Mary L. Boas: Mathematical Methods in the Physical Sciences

3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)

4-.Electronic Materials, Web Sites etc

5- Other learning material such as computer-based programs/CD, professional standards/regulations

#### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Lecture rooms, laboratories, etc.)

- Classrooms ready and equipped with educational media

2. Computing resources

- Data show and internet.

- Computer and microphone in Lecture rooms

3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)

- Video cameras linked to TV circuits

#### G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Regular evaluation of the theoretical and practical parts of the course to identify the weaknesses areas

- Performance appraisal form filled up by each student to show level of fulfilment

- Confidential completion of standard course evaluation questionnaire

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- A statistical regular review and analysis of the students' achievement in the



department.

- Prepare a questionnaire which should be filled by the students at the end of the term. The questionnaire should be after that analyzed and carefully studied.

### 3 Processes for Improvement of Teaching

- Provide training and workshop opportunities for the teaching staff to improve their teaching strategies.

- Form committees to follow up progress and work on improvement.

- Provide opportunities to improve academic courses and research through conferences.

- Provide the teaching staff members with all the references and electronic resources.

- Updating through more reading books and articles related to the course

- Improve relations between instructor and students.

4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

- Check marking of the answer sheets of examination papers with other colleagues

- Check progress level of the students (this can be done by an independent teacher by reviewing students' records and compare the students' work with another from a different institute).

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Student's feedback on the quality of the course.

- Consulting other faculty members or collaborators in overseas universities for their views on the method of quality of improvement

- Check other universities web sites to compare our lectures with them

- Compare the syllabus with the syllabus of standard universities.

- Form a specialized committee from the department to review the progress of teaching and update the resources

- Consult distinguished students and discuss with them positive and negative points in Lectures.

Name of Course Instructor: DrAhmed Ali Darwish

Signature: \_Ahmed Ali Darwish\_\_\_ Date SpecificationCompleted: \_\_\_18-4-2019\_



Program Coordinator: Dr. Fahad Alharbi Signature: **Dr. Fahad Alharbi** Date Received: 19/4/2019