

المركز الوطني للتقويم والاعتماد الأكاديمي

**National Center for Academic Accreditation and Evaluation**

### ATTACHMENT 5.

**T6. COURSE SPECIFICATIONS**

**(CS)**

**Math 683 (**Complex Analysis II**)**

**Course Specifications**

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| Institution: : **King Saud University** | Date: March 2019 |
| College/Department: **College of Science/ Department of Mathematics.** | |

**A. Course Identification and General Information**

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| 1. Course title and code: Math-683 (Complex Analysis II) |
| 2. Credit hours: 3+0 |
| 3. Program(s) in which the course is offered. Doctorate in Mathematics  (If general elective available in many programs indicate this rather than list programs) |
| 4. Name of faculty member responsible for the course:  Several faculty members (Examples: Dr. Mongi Blel, Dr. Nabil Ourimi, Dr. Hocine Guediri, Dr. Maysaa Mohamed Al Qurashi ) |
| 5. Level/year at which this course is offered: |
| 6. Pre-requisites for this course (if any): : Fourth year- Seventh level |
| 7. Co-requisites for this course (if any): None |
| 8. Location if not on main campus: |
| 9. Mode of Instruction (mark all that apply)  a. **traditional classroom** 🗹 What percentage? 50%  b.  **blended (traditional and online**) 🗹 What percentage? 50%  c. e-learning What percentage?  d. correspondence What percentage?  f. other What percentage?  Comments: |

**B Objectives**

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| 1. Summary of the main learning outcomes for students enrolled in the course.  Mittag Leffler theorem, Holomorphics functions of several variables, Domains of holomorphy, Subharmonic and plurisubharmonic functions, Pseudoconvex domains. |
| 2. Briefly describe any plans for developing and improving the course that are being implemented. (eg., increased use of IT or web based reference material, changes in content as a result of new research in the field)  - Exploring computers in teaching to support presenting the material.  - Providing a website for the material accessible for all students.  - Giving homework assignments periodically and providing graders to mark them, in order to keep the students following the course. |

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| 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) |

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

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| Course Description: |

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| 1. Topics to be Covered | | |
| List of Topics | No. of  Weeks | Contact hours |
| Holomorphic functions of several variables, Hartog’s theorem… | 5 | 15 |
| Subharmonic and plurisubharmonic functions… | 5 | 15 |
| Domains of Holomorphy and pseudoconvex domains … | 4 | 12 |
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| 2. Course components (total contact hours and credits per semester): | | | | | | | |
|  | | Lecture | Tutorial | Laboratory/  Studio | Practical | Other: | Total |
| Contact  Hours | Planed | 42 hours |  |  |  |  |  |
| Actual |  |  |  |  |  |  |
| Credit | Planed |  |  |  |  |  |  |
| Actual |  |  |  |  |  |  |

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| **3. Additional private study/learning hours expected for students per week.**  3 hours a week for homework and revision. |

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| 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**  **And Course Learning Outcomes** | **Course Teaching**  **Strategies** | **Course Assessment**  **Methods** |
| **1.0** | **Knowledge** | | |
| 1.1 | Description of the knowledge to be acquired  Holomorphic functions of several variables, Subharmonic and plurisubharmonic functions. | Teaching strategies to be used to develop that knowledge- Consulting instructors through office hours. Activity within tutorial sessions.  Homework assignments.  Proposing typical problems from textbooks to be solved. | Methods of assessment of knowledge acquired  - One mid-term exams.  - Final exam.  - Evaluation of activities during lectures and tutorials. |
| 1.2 |  |  |  |
| **2.0** | **Cognitive Skills** | | |
| 2.1 | Description of cognitive skills to be developed  **Pointing out the main goals of the course and connecting previous knowledge to the lectures material. Providing typical practical examples for various concepts of the material.** | Teaching strategies to be used to develop these cognitive skills  **- Orienting the students to how to think about formulating mathematical models through discussions during the lectures.**  **- Learning them how to come up with original solutions to problems.**  **- Homework assignments and mini-projects.** |  |
| 2.2 |  |  |  |
| **3.0** | **Interpersonal Skills & Responsibility** | | |
| 3.1 | Description of the interpersonal skills and capacity to carry responsibility to be developed  **Learning the students how to deal with a given problem and how to provide independent related approaches.**  **Helping them to learn how to expose and freely discuss any encountered problems.**  Learning them how to write and present homework solutions (and even exam copies) in a readable form. | Teaching strategies to be used to develop these skills and abilities  **Exploring various sophisticated resources related to the material.**  **Correcting homework assignments and orienting students to adequate presentations of homework solutions.**  Methods of assessment of students interpersonal skills and capacity to carry responsibility | Teaching strategies to be used to develop these skills and abilities  **Exploring various sophisticated resources related to the material.**  **Correcting homework assignments and orienting students to adequate presentations of homework solutions.**  Methods of assessment of students interpersonal skills and capacity to carry responsibility  **Routine check of students comprehension of the course. Encouraging students to participate in educational competitions.** |
| 3.2 |  |  |  |
| **4.0** | **Communication, Information Technology, Numerical** | | |
| 4.1 | Description of the skills to be developed in this domain.  **Exploration of computational resources (computers….etc).**  **Editing and exposing homework solutions by means of text editors.**  Participating in online scientific forums. | Teaching strategies to be used to develop these skills  **Encouraging students to benefit from various available facilities and to update their computational skills, namely that it has been developing crazily fast nowadays.**  **Guiding them to explore various available internet resources serving the course.** | Methods of assessment of students numerical and communication skills  **Mainly through forums and educational competitions. In other words, one may evaluate the provided efforts during educational competitions, which must be encouraged and supported by offering prizes to distinguished participants.** |
| 4.2 |  |  |  |
| **5.0** | **Psychomotor** | | |
| 5.1 | (i) Description of the psychomotor skills to be developed and the level of performance required  **Not applicable.** | (ii) Teaching strategies to be used to develop these skills  **Not applicable.** | (iii) Methods of assessment of students psychomotor skills  **Not applicable.** |
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| 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 Assessment |
| 1 | First midterm exam | 8th week | 40% |
| 2 | Homework and tutorial activities | Over all weeks | 10% |
| 3 | Final Exam | By the end | 50% |
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**D. Student Academic Counseling and Support**

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| 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)  **Two office hours.** |

**E Learning Resources**

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| 1. List Required Textbooks  Complex Analysis I, II |
| 2. List Essential References Materials (Journals, Reports, etc.) An Introduction to complex analysis in several variables LARS HORMANDER, NORTH-HOLLAND |
| 3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.  **A big deal of online internet resources** |
| 4. Other learning material such as computer-based programs/CD, professional standards or regulations and software. |

**F. Facilities Required**

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| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.) |
| 1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)  A maximum of 25 student in each classroom. |
| 2. Technology resources (AV, data show, Smart Board, software, etc.)  **Computer labs equipped with sophisticated machines.**  **Increasing the capacity of the internet network in order to accommodate more users.** |
| 3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) |

**G Course Evaluation and Improvement Processes**

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| 1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching  **Discussing with the instructors of subsequent courses requiring the relevant course, mainly regarding the ability of the students to take these courses.** |
| 2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department  **Discussions and forums** |
| 3. Processes for Improvement of Teaching  **Organizing Workshops and training periods for teachers about sophisticated teaching methods.**  **Developing teaching skills of instructors by encouraging problem solving seminars.** |
| 4. Processes for Verifying Standards of Student Achievement (e.g. 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) |
| 5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. |

Name of Course Instructor: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date Specification Completed: \_\_\_\_\_\_\_\_\_\_\_\_

Program Coordinator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date Received: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_