|  |  |
| --- | --- |
| **Course Title:**  | **Galaxies** |
| **Course Code:** | **ASTR 481** |
| **Program:** | **ASTR-PHYS** |
| **Department:**  | **Astronomy** |
| **College:** | **Science** |
| **Institution:** | **King AbdulAziz University** |

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# A. Course Identification

|  |  |
| --- | --- |
| **1. Credit hours:** |  |
| **2. Course type** |
| **a.** | University |  | College |  | Department | **✓** | Others |  |  |
| **b.** | Required | **✓** | Elective |  |  |
| **3. Level/year at which this course is offered:** | **8th Level / 4th Year** |
| **4. Pre-requisites for this course** (if any)**: ASTR351, STAT201** |
| **5. Co-requisites for this course** (if any)**: None** |
|  |

## 6. Mode of Instruction (mark all that apply)

| **No** | **Mode of Instruction** | **Contact Hours** | **Percentage**  |
| --- | --- | --- | --- |
| **1** | **Traditional classroom** | **2** | **100%** |
| **2** | **Blended**  |  |  |
| **3** | **E-learning** |  |  |
| **4** | **Correspondence** |  |  |
| **5** | **Other**  |  |  |

**7. Actual Learning Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Learning Hours** |
| **Contact Hours** |
| **1** | **Lecture** | **30** |
| **2** | **Laboratory/Studio** |  |
| **3** | **Tutorial**  |  |
| **4** | **Others** (specify) |  |
|  | **Total** | **30** |
| **Other Learning Hours\*** |
| **1** | **Study**  | **40 (minimum)** |
| **2** | **Assignments** | **10** |
| **3** | **Library** |  |
| **4** | **Projects/Research Essays/Theses**  | **10** |
| **5** | **Others**  |  |
|  | **Total** | **60** |

**\*** The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

# B. Course Objectives and Learning Outcomes

|  |
| --- |
| 1. Course Description This course contains the following subjects: Morphological classification of galaxies and their cosmic distribution. Surface luminosity distribution. Distances and magnitudes of galaxies. Photometric characteristics of galactic light in different spectral regions. Apparent distribution of galaxies relative to direction. The relation between time and distances to galaxies. Masses of galaxies. Star counts in galaxies. Disc galaxies. |
| 2. Course Main ObjectiveUnderstanding the key features of our galaxy such as, the morphological classification of galaxies and their cosmic distribution, the photometric characteristics of galactic light in different spectral regions, the relation between time and distances to galaxies, and the masses of galaxies, and the star counts in galaxies. |
|  |

## 3. Course Learning Outcomes

| **CLOs** | **Aligned****PLOs** |
| --- | --- |
| 1 | **Knowledge:** |  |
| 1.1 | Define the major parts of the our galaxy | K3 |
| 1.2 | List the different types of normal and active galaxies.  | K3, K9 |
| 1.3 | Outline the features of various stellar populations | K3, K9 |
| 1.4 | Describe the distribution of galaxies in space | K4, K11 |
| 1.5 | State the relation between time and distances to galaxies | K1 |
| **2** | **Skills :** |  |
| 2.1 | Compare between the various morphological types of normal galaxies. | S1, S3 |
| 2.2 | Compare between the various types of active galaxies.. | S1, S3 |
| 2.3 | Explain the photometric characteristics of galactic light in different spectral regions. | S7, S8 |
| 2.4 | Interpret the relation between time and distances to galaxies. | S6,S7 |
| 2.5 | Write a report on the dwarf galaxies | S12, S13 |
| **3** | **Competence:** |  |
| 3.1 | Establish and manage a research project on the recent observations of active galaxies. | C2 |

# C. Course Content

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
| 1 | The structure of the Milky Way | 3 |
| 2 | The stellar populations  | 3 |
| 3 | Morphological classifications of galaxies | 3 |
| 4 | Surface luminosity distribution  | 3 |
| 5 | The relation between time and distances to galaxies | 3 |
| 6 | The distribution of galaxies in space | 3 |
| 7 | Photometric characteristics of galactic light in different spectral regions. | 3 |
| 8 | Dwarf galaxies  | 3 |
| 9 | Elliptical galaxies | 3 |
| 10 | The active galaxies | 3 |
| **Total** | **30** |

# D. Teaching and Assessment

## 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| **Code** | **Course Learning Outcomes** | **Teaching Strategies** | **Assessment Methods** |
| --- | --- | --- | --- |
| **1.0** | **Knowledge** |
| 1.1 | Define the major parts of the our galaxy | Lectures & in class discussion | Exams & Homework  |
| 1.2 | List the different types of normal and active galaxies.  |
| 1.3 | Outline the features of various stellar populations |
| 1.4 | Describe the distribution of galaxies in space |
| 1.5 | State the relation between time and distances to galaxies |
| **2.0** | **Skills** |
| 2.1 | Compare between the various morphological types of normal galaxies. | Lectures & in class discussion | Exams & Homework  |
| 2.2 | Compare between the various types of active galaxies.. |
| 2.3 | Explain the photometric characteristics of galactic light in different spectral regions. |
| 2.4 | Interpret the relation between time and distances to galaxies. |
| 2.5 | Write a report on the dwarf galaxies | Oral discussion | Student presentation & Lab Exam |
| **3.0** | **Competence** |
| 3.1 | Establish and manage a research project on the recent observations of active galaxies. | In class discussion & search the astronomy database for the required observation. | Project reports & student presentation |

##

## 2. Assessment Tasks for Students

| **#** | **Assessment task\***  | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | Exams I | 6th | 15% |
| **2** | Exams II | 11th | 15% |
| **4** | Homework  | Each two weeks | 15% |
| **5** | Report  | 4th, 7th, 11th | 10% |
| **6** | Project + Student’s oral presentation | 13th | 15% |
| **7** | Final Exam | 15th | 30% |

**\*Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

# E. Student Academic Counseling and Support

|  |
| --- |
| **Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :** |
| Office hours: 2 hours per week |

# F. Learning Resources and Facilities

## 1.Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | * Galaxtic Astronomy, Michal Merrified & James Binney, 1998.
* Tayler R.J. 1978, " Galaxies: Structure and evolution" Galaxy formation, Longair, Springer, 1998.
 |
| **Essential References Materials** | Extragalactic Astronomy and Cosmology: An Introduction, Peter Schneider, Springer 2015.* Galaxies in the Universe: An Introduction, Linda S. Sparke, John S. Gallagher, 2nd edition, Cambridge 2012.
 |
| **Electronic Materials** | Abstract data services (ADS), NASA/IPAC extragalactic database (NED) and related web sites  |
| **Other Learning Materials** |  |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**(Classrooms, laboratories, demonstration rooms/labs, etc.) | * Lecture’s room with 10 seats
* Internet connection
* Library
 |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | Data show |
| **Other Resources** (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) |  |

# G. Course Quality Evaluation

| **Evaluation****Areas/Issues**  | **Evaluators**  | **Evaluation Methods** |
| --- | --- | --- |
| Course contents | Students | Course evaluation questionnaire (Direct) |
| Learning resources and equipment | Students | Student experience questionnaire (Direct) |
| Effectiveness of teaching and assessment | Students | Student experience questionnaire (Direct) |
| Course contents and materials  | Faculty members | By department council discussion (Indirect) |

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

**Assessment Methods** (Direct, Indirect)

# H. Specification Approval Data

|  |  |
| --- | --- |
| **Council / Committee** |  |
| **Reference No.** |  |
| **Date** | September 2017 |