GENERAL STUDIES COURSE PROPOSAL COVER FORM

Course Information:
Copy and paste current course information from Class Search/Course Catalog.

<table>
<thead>
<tr>
<th>College/School</th>
<th>Mary Lou Fulton Teachers College</th>
<th>Department/School</th>
<th>Division 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefix:</td>
<td>SCN</td>
<td>Number:</td>
<td>301</td>
</tr>
<tr>
<td>Title:</td>
<td>Ecology and Natural History of the Sonoran Desert</td>
<td>Units:</td>
<td>4</td>
</tr>
</tbody>
</table>

Course description: The Ecology and Natural History of the Sonoran Desert is an introduction to the common flora and fauna of the southwest Sonoran Desert. The course will explore the distribution, behavior and ecology of the desert plants and animals and the role of evolutionary principles in understanding the adaptations and survival strategies. The course also includes the analysis of human effects on the southwest landscapes and introduction to techniques and strategies to conserve and manage natural resources in the desert environmental.

Is this a cross-listed course? No

If yes, please identify course(s):

Is this a shared course? No

If so, list all academic units offering this course:

Note: For courses that are crosslisted and/or shared, a letter of support from the chair/director of each department that offers the course is required for each designation requested. By submitting this letter of support, the chair/director agrees to ensure that all faculty teaching the course are aware of the General Studies designation(s) and will teach the course in a manner that meets the criteria for each approved designation.

Is this a permanent-numbered course with topics? Yes

If yes, all topics under this permanent-numbered course must be taught in a manner that meets the criteria for the approved designation(s). It is the responsibility of the chair/director to ensure that all faculty teaching the course are aware of the General Studies designation(s) and adhere to the above guidelines.

Chair/Director Initials (Required)

Requested designation: Natural Sciences–SG

Mandatory Review: No

Eligibility: Permanent numbered courses must have completed the university’s review and approval process. For the rules governing approval of omnibus courses, contact Phyllis.Lucie@asu.edu.

Submission deadlines dates are as follow:
For Fall 2018 Effective Date: October 1, 2017
For Spring 2019 Effective Date: March 10, 2018

Area(s) proposed course will serve:
A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

Checklists for general studies designations:
Complete and attach the appropriate checklist

- Literacy and Critical Inquiry core courses (L)
- Mathematics core courses (MA)
- Computer/statistics/quantitative applications core courses (CS)
- Humanities, Arts and Design core courses (HU)
- Social-Behavioral Sciences core courses (SB)
- Natural Sciences core courses (SQ/SG)
- Cultural Diversity in the United States courses (C)
- Global Awareness courses (G)
- Historical Awareness courses (H)

A complete proposal should include:

- [ ] Signed course proposal cover form
- [ ] Criteria checklist for General Studies designation being requested
- [ ] Course catalog description
- [ ] Sample syllabus for the course
- [ ] Copy of table of contents from the textbook and list of required readings/books

It is respectfully requested that proposals are submitted electronically with all files compiled into one PDF.

Contact information:

Name: Molina Walters
E-mail: Drmo@asu.edu
Phone: 4807271510

Department Chair/Director approval: (Required)

Chair/Director name (Typed): Nicole Thompson
Date: 9-27-2018

Rev. 3/2017
Chair/Director (Signature):
Proposer: Please complete the following sections and attach appropriate documentation.

### ASU--[SQ] CRITERIA

#### I. - FOR ALL QUANTITATIVE [SQ] NATURAL SCIENCES CORE AREA COURSES, THE FOLLOWING ARE CRITICAL CRITERIA AND MUST BE MET:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>Identify Documentation Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>A. Course emphasizes the mastery of basic scientific principles and concepts.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>B. Addresses knowledge of scientific method.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>C. Includes coverage of the methods of scientific inquiry that characterize the particular discipline.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>D. Addresses potential for uncertainty in scientific inquiry.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>E. Illustrates the usefulness of mathematics in scientific description and reasoning.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>F. Includes weekly laboratory and/or field sessions that provide hands-on exposure to scientific phenomena and methodology in the discipline, and enhance the learning of course material.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>G. Students submit written reports of laboratory experiments for constructive evaluation by the instructor.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>H. Course is general or introductory in nature, ordinarily at lower-division level; not a course with great depth or specificity.</td>
</tr>
</tbody>
</table>

#### II. - AT LEAST ONE OF THE FOLLOWING ADDITIONAL CRITERIA MUST BE MET WITHIN THE CONTEXT OF THE COURSE:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>Identify Documentation Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>A. Stresses understanding of the nature of basic scientific issues.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>B. Develops appreciation of the scope and reality of limitations in scientific capabilities.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>C. Discusses costs (time, human, financial) and risks of scientific inquiry.</td>
</tr>
</tbody>
</table>

**NOTE:** CRITERIA FOR [SG] COURSES BEGIN ON PAGE 4.
### III. - [SQ] COURSES MUST ALSO MEET THESE ADDITIONAL CRITERIA:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>Identify Documentation Submitted</th>
</tr>
</thead>
</table>

**A.** Provides a substantial, quantitative introduction to fundamental principles governing behavior of matter and energy, in physical or biological systems.

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

**B.** Includes a college-level treatment of some of the following topics *(check all that apply below):*

- Atomic and molecular structure
- Electrical processes
- Chemical processes
- Elementary thermodynamics
- Electromagnetics
- Dynamics and mechanics

**[SQ] REQUIREMENTS CANNOT BE MET BY COURSES:**

- Presenting a qualitative survey of a discipline.
- Focusing on the impact of science on social, economic, or environmental issues.
- Focusing on a specific or limiting but in-depth theme suitable for upper-division majors.
Proposer: Please complete the following section and attach appropriate documentation.

### ASU-[SG] CRITERIA

**I. - FOR ALL GENERAL [SG] NATURAL SCIENCES CORE AREA COURSES, THE FOLLOWING ARE CRITICAL CRITERIA AND MUST BE MET:**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>Identify Documentation Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒</td>
<td>☐</td>
<td>1. Course emphasizes the mastery of basic scientific principles and concepts.</td>
</tr>
<tr>
<td>☒</td>
<td>☐</td>
<td>2. Addresses knowledge of scientific method.</td>
</tr>
<tr>
<td>☒</td>
<td>☐</td>
<td>3. Includes coverage of the methods of scientific inquiry that characterize the particular discipline.</td>
</tr>
<tr>
<td>☒</td>
<td>☐</td>
<td>4. Addresses potential for uncertainty in scientific inquiry.</td>
</tr>
<tr>
<td>☒</td>
<td>☐</td>
<td>5. Illustrates the usefulness of mathematics in scientific description and reasoning.</td>
</tr>
<tr>
<td>☒</td>
<td>☐</td>
<td>6. Includes <strong>weekly</strong> laboratory and/or field sessions that provide hands-on exposure to scientific phenomena and methodology in the discipline, and enhance the learning of course material.</td>
</tr>
<tr>
<td>☒</td>
<td>☐</td>
<td>7. Students submit written reports of laboratory experiments for constructive evaluation by the instructor.</td>
</tr>
<tr>
<td>☒</td>
<td>☐</td>
<td>8. Course is general or introductory in nature, ordinarily at lower-division level; not a course with great depth or specificity.</td>
</tr>
</tbody>
</table>

**II. - AT LEAST ONE OF THE ADDITIONAL CRITERIA THAT MUST BE MET WITHIN THE CONTEXT OF THE COURSE:**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Identify Documentation Submitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒</td>
<td>☐</td>
<td>A. Stresses understanding of the nature of basic scientific issues.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>B. Develops appreciation of the scope and reality of limitations in scientific capabilities.</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>C. Discusses costs (time, human, financial) and risks of scientific inquiry.</td>
</tr>
</tbody>
</table>
### [SG] REQUIREMENTS CANNOT BE MET BY COURSES:

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presenting a qualitative survey of a discipline.</td>
</tr>
<tr>
<td>Focusing on the impact of science on social, economic or environmental issues.</td>
</tr>
<tr>
<td>Focusing on a specific or limiting but in-depth theme suitable for upper-division majors.</td>
</tr>
</tbody>
</table>
Explain in detail which student activities correspond to the specific designation criteria. Please use the following organizer to explain how the criteria are being met.

<table>
<thead>
<tr>
<th>Criteria (from checksheet)</th>
<th>How course meets spirit (contextualize specific examples in next column)</th>
<th>Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)</th>
</tr>
</thead>
</table>
| A. Mastery of basic scientific principles and concepts in the field of ecology. | Student learning outcomes and assignments. The course will provide a general understanding about the Sonoran Desert ecosystem, the level of biological organization and interaction among species. Through readings, class discussions and field experiences students will address learning outcomes about the organization of ecosystems, populations and native species. Ecosystem processes like plant-polinator relationships, symbiosis, and biodiversity will be addressed. Population thresholds, ecological resilience and disturbances will be discussed and students will complete assignment to show learning outcomes have been met. | 1. Student learning outcomes  
2. Assignments:  
   A. Weekly Topics and readings. Reading focus questions and vocabulary to build background content knowledge.  
   B. VISA Activities: student complete activities that demonstrate their understanding of ecological principles and basics.  
   C. Field Study Labs: Hands-on inquiry based field activities. Students complete three field activities that apply weekly learning outcomes to reinforce and build learning.  
   D. Desert Research Presentations - students will become an expert on one of the course topics and share their knowledge with their peers.  
   E. Desert Investigation Activities - students will apply what they are learning in class to campus field activities lead by the instructor. Students will complete a field investigation log to document their learning and understanding. |
| B. Addresses knowledge of scientific method | *Student complete 3 field study assignments. Each of these labs will have a difference focus: ecosystems, flora, fauna and characteristics of the Sonoran Desert.  
*Students will complete an activity write up for each field study to demonstrate their learning and understanding of the content and | Student learning outcomes and assignments.  
#1- Field Study Lab Activities: hands-on, inquiry based field activities that have students conducting field research and completing a lab write up.  
#2 Sonoran Desert Field Guide - spend time in the field identifying the flora and fauna. Conducting research to identify endemic and native wildlife.  
#3 Desert Investigation Activities - students |
<table>
<thead>
<tr>
<th>D. Addresses potential for uncertainty in scientific inquiry.</th>
<th>Students will conduct field test and complete a plant study, bird study or habitat study and report their findings. *Students will be engaged in Desert Investigation Activities that provide opportunities to explore the Sonoran desert ecosystem and complete tasks that follows the scientific method and are inquiry based.</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. Illustrates the usefulness of mathematics in scientific description and reasoning.</td>
<td>Students will apply what they are learning in class to campus field activities lead by the instructor. Students will complete a field investigation log to document their learning and understanding.</td>
</tr>
<tr>
<td>F. Field Sessions that provide hands-on exposure to scientific phenomena and methodology in the discipline.</td>
<td>G. Written reports will apply what they are learning in class to campus field activities lead by the instructor. Students will complete a field investigation log to document their learning and understanding.</td>
</tr>
<tr>
<td>H. Course is introductory in nature.</td>
<td>Students will be introduced to the Sonoran Desert Ecosystem. Topics will be introduced and an overview constructed that addresses what makes the sonoran desert unique and a desert ecosystem.</td>
</tr>
<tr>
<td></td>
<td>Learning outcomes and course assignments. The syllabus outlines basic topics covered each week. It shows and overview of the Sonoran Desert. Text: readings each week give an overview of different desert characteristics with a brief introduction to each.</td>
</tr>
</tbody>
</table>
SCN 301 Ecology and Natural History of the Sonoran Desert
Schedule Line
4 credits

Instructor Information:

Dates of classes:
Instructor:
Email:
Work Phone:
Office Hours:
Office Location:

Catalog Description
The Ecology and Natural History of the Sonoran Desert is an introduction to the common flora and fauna of the southwest Sonoran Desert. The course will explore the distribution, behavior and ecology of the desert plants and animals and the role of evolutionary principles in understanding the adaptations and survival strategies. The course also includes the analysis of human effects on the southwest landscapes and introduction to techniques and strategies to conserve and manage natural resources in the desert environmental.

Course Format
Lecture/discussion/Field Study

Required Text

Purchase the course text(s) from the ASU Bookstore (http://bookstore.asu.edu/) or another retailer of your choosing.

Required Materials
- Composition or Spiral Notebook
- Computer for class research and activities.

Provided Materials
- ASU Blackboard Course Management Website at http://myasucourses.asu.edu (All ASU students have FREE access to this web resource.)
Student Learning Outcomes

Upon completion of this course the student should be able to:

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>NGSS Standard</th>
<th>NAAEE Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain the meteorological and biological principles that describe the formation of the major biotic communities in the Southwest.</td>
<td>ESS2</td>
<td>1 E,G; 2.1A, 2.2A, C</td>
</tr>
<tr>
<td>2. Explain the geological principles and processes that created the topography in the desert Southwest.</td>
<td>ESS1; ESS2; LS2</td>
<td>1A, E, G; 2.1A</td>
</tr>
<tr>
<td>3. Name and describe basic desert plant structures and describe their form and function.</td>
<td>LS4</td>
<td>1A, E, G; 2.2A-C</td>
</tr>
<tr>
<td>4. Describe the adaptations of desert plants and animals that enable them to live and survive in the Sonoran Desert environment.</td>
<td>ESS2; LS4</td>
<td>1A, E, G; 2.2A-C</td>
</tr>
<tr>
<td>5. Identify and describe common plants and animals of the Sonoran Desert.</td>
<td></td>
<td>2.2A</td>
</tr>
<tr>
<td>6. Explain interactions and interdependence among plant/animal populations and predator/prey populations.</td>
<td>LS4</td>
<td>1C, E, G; 2.2A, C</td>
</tr>
<tr>
<td>7. Engage in outdoor investigations to gain an understanding about desert features, flora and fauna.</td>
<td>LS1A, LS2</td>
<td>1A-C, E, G; 2.2A</td>
</tr>
<tr>
<td>8. Develop an understanding of your sense of place and your role in local and global ecosystems.</td>
<td>LS2; LS4</td>
<td>2.2A; 2.4A-E; 3.1</td>
</tr>
<tr>
<td>9. Develop an understanding of the civic and social responsibility of environmental stewardship.</td>
<td>LS2; ESS3</td>
<td>2.3A-E; 2.4A-E 4A-B</td>
</tr>
<tr>
<td>10. Develop self-efficacy as an environmental steward.</td>
<td>ESS3</td>
<td>3.2A-C; 4C-D</td>
</tr>
</tbody>
</table>

- NGSS Standards: [https://www.nextgenscience.org/search-standards](https://www.nextgenscience.org/search-standards)
- NAAEE Standards: [https://cdn.naaee.org/sites/default/files/learnerguidelines_new.pdf](https://cdn.naaee.org/sites/default/files/learnerguidelines_new.pdf)

Course Assignments:

**Please Note**: The major assignments for this course will be automatically routed through SafeAssignment, a web-based plagiarism detection service. This service generates an originality report that identifies all material in the student paper that appears to be derived from other sources, including both sources that are properly acknowledged and cited and any that are not. The report will be reviewed before your assignment is graded. All work is to be original.

**Assignment Alignment and Point Value (may vary based on the learning needs of class)**

<table>
<thead>
<tr>
<th>Assignment or Assessment</th>
<th>Indicators</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reading Focus Questions and Research: (BPR’S)</strong></td>
<td>Outcomes 1, 2, 3, 4, 5, 6</td>
<td>Score/Pts 10</td>
</tr>
<tr>
<td>Students will complete focus questions and research to increase their knowledge and understanding of course content. The focus questions and research will be completed on the form provided and uploaded to blackboard. A copy of these questions will be put inside the Sonoran Desert Notebook and used during class discussions. Reading focus questions will vary from 10 – 20 points.</td>
<td></td>
<td>100 total</td>
</tr>
<tr>
<td><strong>Desert Identification Activity:</strong></td>
<td>Outcomes 3, 4, 5, 7</td>
<td>Score/Pts 10@15</td>
</tr>
<tr>
<td>Students will learn to recognize and identify common geology features, and wildlife of the Sonoran Desert by completing ten photo and description matching activities. Students will work on these identifications before class and come to class prepared to share what they have learned. Students will complete ID assessments covering these areas thought the ETickets. 10 @15pt each</td>
<td></td>
<td>150 total</td>
</tr>
</tbody>
</table>
**VISA: Very Important Student Activities:**
VISA’s will be used to reinforce your learning, understanding and application for each session based on the learning outcomes. These activities will cover a range of topics that correspond to the week’s theme, and will be completed individually or in groups. You must be present in class to complete and earn credit. These activities cannot be made up due to late arrivals, early departures or absences. These activities will range from 10 – 40pts a piece.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Score/Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3, 4, 5, 7</td>
<td>10-20</td>
</tr>
</tbody>
</table>

**Field Study Activities:**
Students will complete three field assignments that will reinforce class content, and session learning outcomes. The field assignments are designed to get students outside exploring the desert environment and applying what has been learned in class. These activities will range from 35 – 50pts a piece.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Score/Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>3, 4, 5, 6, 7</td>
<td>135 total</td>
</tr>
</tbody>
</table>

**Desert Investigation Activities:**
Session field investigations will be conducted on campus to apply the content learned in the class session to real world inquiry experience and knowledge. Students will complete a field investigation log to record their learning. 10pts A final campus field trip will be used to assess flora knowledge 20 pts.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Score/Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3, 4, 5, 7</td>
<td>100 total</td>
</tr>
</tbody>
</table>

**Desert Research Presentations:**
Each student will become an expert in one of the weekly topics. The presenter(s) will address reading focus questions, indentifications and learning outcomes.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Score/Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3, 4, 5, 7</td>
<td>30 total</td>
</tr>
</tbody>
</table>

**Assessment**
10 Eticket will be used to monitor your learning, progress and performance. These checks cannot be made up due to late arrivals, early departures or absences. You must be present in class to participate, complete and earn credit. These assessments may cover assigned readings, identifications and any materials covered in class the previous or present week.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Score/Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3, 4, 5, 7</td>
<td>270 total</td>
</tr>
</tbody>
</table>

**Sonoran Desert Final Synthesis:**
A written final synthesis will help you review material covered throughout the semester, allow you to apply what you have learned and prepare for the comprehensive final exam. Written in our words.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Score/Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3, 4, 5, 7</td>
<td>100 total</td>
</tr>
</tbody>
</table>

### Tentative Course Calendar

<table>
<thead>
<tr>
<th>Module</th>
<th>Topics</th>
<th>Readings or Media</th>
<th>Assignments</th>
</tr>
</thead>
</table>
| Module 1 | **Introduction to the Sonoran Desert**  
*Welcome  
*Introduction to the Sonoran Desert  
*What is a desert?  
*Identification#1: State Symbols (in class) | | View: Module 1 PowerPoint |
| Module 2 | **Types of Desert Terrain**  
* Terrain characteristics  
*ETicket  
*VISA  
*Desert Investigations Intro (DIA) – campus | House in the Sun Ch. 1 & 2  
Sonoran Desert pgs. 2 - 11 | **View:** Module 2 PowerPoint  
**Complete:** Bullet Point Reading (BPR)  
**Do:** Identification#2: Plants/Animals |
| Module 3 | **Desert Adaptations**  
*How do desert plants & animal adapt to the Desert?*  
*ETicket*  
*VISA*  
*Desert Plants /Animals Presentations*  
*DIA – campus field trip* | House in the Sun Ch. 3  
Sonoran Desert pgs. 12 - 15 | View: Module 3 PowerPoint  
Complete: BPR’s  
Do: Identification#3: Wildlife |
| --- | --- | --- |
| Module 4 | **Field Study: Applying Desert Basics**  
Field Assignment#1 | A Desert Scrapbook | Field Assignment #1 |
| Module 5 | **Life on the Alluvial Plain**  
*What are the characteristics of the Alluvial Plain?*  
*ETicket*  
*VISA*  
*Desert Alluvial Plain Presentations*  
*DIA – campus field trip* | House in the Sun Ch. 4  
Sonoran Desert pgs. 16 - 22 | View: Module 4 PowerPoint  
Complete: BPR’s  
Do: Identification#4: Alluvial Plain |
| Module 6 | **Life Among the Sand Dunes**  
*What are the characteristics of the Sand Dunes?*  
*ETicket*  
*VISA*  
*Desert Sand Dunes Presentations*  
*DIA – campus field trip* | House in the Sun Ch. 5  
Sonoran Desert pgs. 22 - 30 | View: Module 5 PowerPoint  
Complete: BPR’s  
Do: Identification#5: Sand Dunes |
| Module 7 | **Life on the Bajada**  
*What are the characteristics of the Bajada?*  
*ETicket*  
*VISA*  
*Desert Bajada Presentations*  
*DIA – campus field trip* | House in the Sun Ch. 6  
Sonoran Desert pgs. 31 - 37 | View: Module 6 PowerPoint  
Complete: BPR’s  
Do: Identification#6: Bajada |
| Module 8 | **Field Study: Applying Desert Basics**  
Field Assignment#2  
*Work on Synthesis* | | Field Assignment #2 |
| Module 9 | **Life in the Canyon**  
*What are the characteristics of the Canyons?*  
*ETicket*  
*VISA*  
*Desert Canyon Presentations*  
*DIA – campus field trip* | House in the Sun Ch. 7  
Sonoran Desert pgs. 38 - 46 | View: Module 7 PowerPoint  
Complete: BPR’s  
Do: Identification#7: Canyons |
| Module 10 | **Life in the Desert Mountains**  
*Characteristics of the Desert Mountains*  
*ETicket*  
*VISA*  
*Desert Mountains Presentations*  
*DIA – campus field trip* | House in the Sun Ch. 8 | View: Module 8 PowerPoint  
Complete: BPR’s  
Do: Identification#8: Mountains |
| Module 11 | **Field Study: Applying Desert Basics**  
Field Assignment#3 - FIELD GUIDE  
*Work on Synthesis* | | Field Assignment #3  
Field Guide DUE |
<table>
<thead>
<tr>
<th>Module</th>
<th>Title</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>People of the Desert: Then &amp; Now</td>
<td>*Prehistoric People in the Desert: *ETicket *VISA *Desert People Presentations *DIA – campus field trip</td>
</tr>
<tr>
<td></td>
<td>House in the Sun Ch. 9</td>
<td>View: Module 9 PowerPoint Complete: Bullet Point Reading Do: Identification#9: Desert People</td>
</tr>
<tr>
<td>13</td>
<td>You and the Desert Future</td>
<td>*How do we remain safe in the desert? *ETicket *VISA *You, the Desert &amp; Future Presentations *DIA – campus field trip</td>
</tr>
<tr>
<td></td>
<td>House in the Sun Ch. 10 &amp; 11</td>
<td>View: Module 10 PowerPoint Complete: BPR’s Do: Identification#10: You &amp; Desert</td>
</tr>
<tr>
<td>14</td>
<td>Desert Knowledge</td>
<td>*DIA – campus field trip – ASSESSMENT *Comprehensive ETicket</td>
</tr>
<tr>
<td></td>
<td>View: Module 11 PowerPoint Complete: Field Guide</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Synthesizing Desert Learning</td>
<td>*Sonoran Desert Synthesis</td>
</tr>
<tr>
<td></td>
<td>Desert Synthesis DUE</td>
<td></td>
</tr>
</tbody>
</table>

**Grading Scale**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93%-100%</td>
</tr>
<tr>
<td>B</td>
<td>83%-92%</td>
</tr>
<tr>
<td>C</td>
<td>73%-82%</td>
</tr>
<tr>
<td>D</td>
<td>63%-72%</td>
</tr>
<tr>
<td>E</td>
<td>62% and below</td>
</tr>
</tbody>
</table>

The Grading Scale does not include pluses or minuses.

In order to receive a grade for this course, all course assignments must be completed.

**Course/Instructor Evaluation**

The course/instructor evaluation for this course will be conducted online 7-10 days before the last official day of classes of each semester or summer session. Response(s) to the course/instructor are anonymous and will not be returned to your instructor until after grades have been submitted. The use of a course/instructor evaluation is an important process that allows our college to (1) help faculty improve their instruction, (2) help administrators evaluate instructional quality, (3) ensure high standards of teaching, and (4) ultimately improve instruction and student learning over time. Completion of the evaluation is not required for you to pass this class and will not affect your grade, but your cooperation and participation in this process is critical. About two weeks before the class finishes, watch for an e-mail with "ASU Course/Instructor Evaluation" in the subject heading. The email will be sent to your official ASU e-mail address, so make sure ASU has your current email address on file. You can check this online at the following URL: [http://www.asu.edu/epoupdate/](http://www.asu.edu/epoupdate/).
UNIVERSITY/MARY LOU FULTON TEACHERS COLLEGE POLICIES

ACADEMIC INTEGRITY/PLAGIARISM
The ASU Student Handbook contains the following information: “The highest standards of academic integrity are expected of all students. The failure of any student to meet these standards may result in suspension or expulsion from the university and/or other sanctions as specified in the academic integrity policies of the individual academic unit. Violations of academic integrity include, but are not limited to, cheating, fabricating, tampering, plagiarizing, or facilitating such activities. The university and unit academic integrity policies are available from the Office of the Executive Vice President and Provost of the University and from the Deans of the individual academic units.”
The rest of the code, which consists of several pages, is available at the following URL: http://students.asu.edu/srr/code.
Dependent upon instructor’s discretion, penalties for plagiarism range from loss of points on plagiarized assignment to student receiving an ‘E’ for the course.

ACCOMMODATION FOR RELIGIOUS PRACTICES
Students who need to be absent from class due to the observance of a religious holiday or participate in required religious functions must notify the faculty member in writing as far in advance of the holiday/obligation as possible. Students will need to identify the specific holiday or obligatory function to the faculty member. Students will not be penalized for missing class due to religious obligations/holiday observance. The student should contact the class instructor to make arrangements for making up tests/assignments within a reasonable time. http://www.asu.edu/aad/manuals/acd/acd304-04.html

ATTENDANCE AND PARTICIPATION
- All courses in MLFTC require the participation and presence of all class members. Tardiness will negatively affect a student’s final grade. **Three (3) absences** or more than **four (4) hours** during the semester will automatically result in a grade of E for the course.
- **Active participation** of both students and instructor requires that every class member is willing to share ideas, questions, and concerns. It is the responsibility of the instructor to develop an environment conducive to supportive sharing. It is the responsibility of the students to come to class prepared to fully participate in the learning experience. Failure to participate or failure of appropriate attitude may result in a student earning a zero for the day’s participation. Students are also expected to bring questions, based on course text readings and/or individual research, to each class session.
- Students must respect each other and their instructors and act professionally at all times. Failure to maintain appropriate professor demeanor in class is reason for a zero for participation for the day or withdrawal from the class.
- The format of this class is interactive. Participation, discussion, conversation, and dialogue as a whole class and small groups will occur regularly. Participation is defined as relevant and consistent contributions to the class in a manner appropriate for a professional. A student’s attitude and behavior contribute to participation and professionalism.

CELL PHONE POLICY
Please turn off cell phones or place on vibrate during class. Should an emergency occur that requires the use of the cell phone or communication device, quietly exit the classroom completely prior to responding to the device. If student continues to use cell phones in class in ways the instructor deems as inappropriate, the student may be placed on a PIP. Absolutely NO texting or checking of email during class time. Phones are NOT to be out during class- meaning they are put away in your purse or backpack. If phones are seen out or in use without permission this behavior may result in a zero for the day’s VISA assignment and for professionalism, participation and class activity points.

ELECTRONIC COMMUNICATION
Acceptable use of university computers, internet and electronic communications can be found in the Student Code of Conduct (http://www.asu.edu/aad/manuals/usi/us104-01.html) and in the University’s Computer, Internet, and Electronic Communications Policy (http://www.asu.edu/aad/manuals/acd/acd125.html).

GRADE APPEALS
The professional responsibility for assigning grades is vested in the instructor of the course, and requires the careful application of professional judgment. A student wishing to appeal a grade must first meet with the instructor who assigned the grade to try to resolve the dispute. The process for grade appeals is set forth for the undergraduate and graduate programs are available at [https://education.asu.edu/student-forms-policies](https://education.asu.edu/student-forms-policies).

**HANDLING DISRUPTIVE, THREATENING, OR VIOLENT INDIVIDUALS ON CAMPUS**

Students, faculty, staff, and other individuals do not have an unqualified right of access to university grounds, property, or services. Interfering with the peaceful conduct of university-related business or activities or remaining on campus grounds after a request to leave may be considered a crime.

All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off-campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. If either office determines that the behavior poses or has posed a serious threat to personal safety or to the welfare of the campus, the student will not be permitted to return to campus or reside in any ASU residence hall until an appropriate threat assessment has been completed and, if necessary, conditions for return are imposed. ASU PD, the Office of the Dean of Students, and other appropriate offices will coordinate the assessment in light of the relevant circumstances. [http://www.asu.edu/aad/manuals/ssm/ssm104-02.html](http://www.asu.edu/aad/manuals/ssm/ssm104-02.html).

**HARASSMENT PROHIBITED**

ASU policy prohibits harassment on the basis of race, sex, gender identity, age, religion, national origin, disability, sexual orientation, Vietnam era veteran status and other protected veteran status. Violations of this policy may result in disciplinary action, including termination of employees or expulsion of students. Contact Student Life (Downtown campus- 522 N. Central Ave., Post Office Room 247, 480-496-4111; Polytechnic campus- Administration building suite 102, 480-727-1060; Tempe campus- Student Services Building room 263, 480-965-6547; or the West campus- UCB 301, 602-543-8152) if you feel another student is harassing you based on any of the factors above. Contact Equal Opportunity/Affirmative Action (EO/AA) at 480-965-5057 if you feel an ASU employee is harassing you based on any of the factors above. [http://www.asu.edu/aad/manuals/acd/acd401.html](http://www.asu.edu/aad/manuals/acd/acd401.html).

**LATE AND MISSING ASSIGNMENTS**

- To receive full credit for an assignment, it must be turned in on time. Late assignments will receive a reduced score.
- Assignment due dates will be provided on the course calendar. Students are responsible for reading the calendar, noting due dates and times, and planning accordingly.
- In order to earn a passing grade for the course, all assignments must be thoroughly completed (incomplete assignments will earn a zero) and submitted on time. It is the student’s responsibility to know the due dates and submission requirements.
- All assignments must be thoroughly completed and turned in by the end of the semester to pass the course whether they receive a passing grade or not.

**MILITARY PERSONNEL STATEMENT**

A student who is a member of the National Guard, Reserve, or other U.S. Armed Forces branch and is unable to complete classes because of military activation may request a complete or partial administrative unrestricted withdrawal or incomplete depending on the timing of the activation. For information, please see [http://www.asu.edu/aad/manuals/usi/usi201-18.html](http://www.asu.edu/aad/manuals/usi/usi201-18.html).

**MISSED CLASSES DUE TO UNIVERSITY-SANCTIONED ACTIVITIES**

Students who participate in university-sanctioned activities that require classes to be missed, should be given opportunities to make up examinations and other graded in-class work. However, absence from class or examinations due to university-sanctioned activities does not relieve students from responsibility for any part of the course work required during the period of the absence. The student should contact the class instructor to make arrangements for making up tests/assignments within a reasonable time.

The specific activity program coordinator (e.g., assistant athletics director for academic services, director of forensics, director of bands) should, as early as possible, provide the college-designated individual with the class schedule of any student who may be required to miss class because of a university-sanctioned activity.

Students should inform their instructors early in the semester of required class absences. Instructors should attempt to provide opportunities for equivalent work, either before or after the class absence, in accordance...
with any academic unit or college requirements, which may apply.

http://www.asu.edu/aad/manuals/acad/acad304-02.html

PROFESSIONAL BEHAVIOR (THIS SECTION IS ONLY NECESSARY FOR INITIAL CERTIFICATION STUDENTS)
It is expected that students exhibit professional behavior inside the classroom, during intern placements, and working with other students outside of the class on assignments related to this class in addition to behavior in the classroom on ASU’s campus. If at any time your behavior is ‘unprofessional’, the instructor may refer the student to the Director of the Office of Student Services (OSS) for the development of a Professional Improvement Plan (PIP).  https://education.asu.edu/student-forms-policies.

TITLE IX
Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at http://sexualviolenceprevention.asu.edu/faqs/students

UNIVERSITY SERVICES
DISABILITY ACCOMMODATIONS FOR STUDENTS
Mary Lou Fulton Teachers College is committed to student success and ensures an inclusive learning environment for all students. Students with disabilities or disabling health conditions who need accommodations are required to document their condition with the Disability Resource Center https://eoss.asu.edu/drc. The Mary Lou Fulton Teachers College encourages admitted students with disabilities or disabling health conditions who believe that they may need an accommodation to register with the DRC prior to enrolling in the program. That way, all reasonable accommodations can be in place at the beginning of the program. Students who are registered with DRC will be key participants in establishing reasonable and appropriate accommodations with course instructors.

SI (SUPPLEMENTAL INSTRUCTION)
SI seeks to help students process material presented in class through group facilitated discussion led by a trained peer (SI Leader) who has already successfully completed the course. More information will be available on Blackboard under the SI Study Group. Students can receive tutoring for various courses through University Academic Success Programs (UASP). Refer to our website: https://tutoring.asu.edu.

TECHNOLOGICAL SERVICES AND SUPPORT
The Mary Lou Fulton Teachers College encourages students to make use of technological services available through ASU to make their learning experience more efficient. Students with personal laptop computers or netbooks can connect wirelessly to the Internet and to printing services on all four campuses and some school sites. The following support services are available to support student computing needs.

Student Purchases:
Discounted pricing for students purchasing laptop or desktop computers is available at through the ASU bookstore or online. (http://www.bkstr.com/arizonastatestore/shop/technology)

ASU Campus Classroom Connectivity:
In-class use of laptops is encouraged by the Mary Lou Fulton Teachers College. In cases where students need to make presentations during class, most classrooms have the capability of allowing laptops to connect to classroom projectors. Mac laptops may require an adaptor. For collaborative work, social networking tools are provided to ASU students through a Google partnership, including Google docs, spreadsheets, presentations, forms, and sites.

Hardware and Software Support:
ASU 1:1 Technology Studios provide support to students on all four campuses for hardware, software, operating systems, security, networking, etc. (https://ucc.asu.edu/techstudio/)
MyApps provides free software tools including free virus scan software, online applications, and information about discounted software for purchase. (https://webapp3.asu.edu/myapps/)

TUTORING
Tutoring is available on all ASU campuses and Online for a variety of courses in small groups on a walk-in/drop-in basis. Appointments are not taken. For a full list of sites and courses, visit https://tutoring.asu.edu.

WRITING CENTERS

One Center, Many Places: The Writing Center, located on all four ASU campuses and online, offers free tutoring for all enrolled students. All writers—all ASU undergraduate or graduate students—can benefit from visiting the Writing Center to:

- explore, plan, and develop ideas;
- organize and structure a paper;
- integrate and cite sources; and
- write, revise, edit, and proofread.

For more information about ASU’s Writing Centers, including how to make an appointment, please visit our website at https://tutoring.asu.edu/writing-centers.
**Field Guide Assignment**

**Task:** Create a field guide. The organisms in the guide must be found in Arizona.

**Guideline:** For each organism, you must include a photograph, the common name and 4 detailed features, physical attributes, identifying characteristics and habitat. You may organize this in a PowerPoint presentation or a word document.

You need to locate and take an original photograph identifying the flora and fauna to include its location.

<table>
<thead>
<tr>
<th>Date Completed:</th>
<th>Location:</th>
<th>Authors Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Pts Cards</td>
<td>Suggestions (must take own photo)</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>6 cacti</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>3 trees</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>4 bushes</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2 succulents</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2 flower</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 Pts Cards</th>
<th>Suggestions (may take own photo or download photo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>2 birds</td>
</tr>
<tr>
<td>8</td>
<td>2 amphibians</td>
</tr>
<tr>
<td>8</td>
<td>2 mammals</td>
</tr>
<tr>
<td>8</td>
<td>2 reptiles</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5 pts COVER</th>
<th>Sonoran Desert Field Guide, Author Name, Date, Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>105 Pts Total</td>
<td>25 cards total Title Page / cover</td>
</tr>
</tbody>
</table>
Field Study Assignment

Getting outdoors and experiencing nature in itself is a wonderful activity but you can take this experience to another level by turning it into an inquiry-based experience. This assignment gets students outdoors, using their senses, science tools and science processes to explore the desert surroundings. Students will document and complete a lab write up recording their experiences.

- There are many guided nature trips or nature presentations available. Some locations that have them are Boyce Thompson Arboretum, South Mountain, McDowell Preserve, The Phoenix Zoo and The Desert Botanical Garden. Visit their websites to get a list of guided nature hikes, presentations and other programs that are available. Confirm your choice with the instructor before you complete this choice.

- This is a 45-minute (minimum) walk out in nature.

- You can go by yourself or with a partners.

- Each person must prepare his or her own individual report (even if you go with others).

- You will need a camera. You will need to take pictures of yourself at various points of this walk or of the presentation and its location to be included in your report.

On your walk or for a presentation, please do the following: Write up expectations:

1. Record the start & end time, date, location, approximate duration of your outing/presentation, and whether you went alone or with a friend(s).
2. Record detailed observations of the flora and fauna, and the geology of the area. 10 solid observations listing the name, details about the species and a colored sketch or photograph.
   a. Specific details are necessary (ex., “I saw two black turtles sunning themselves on a log…”) Each observation is one full paragraph, minimally.
   b. You need a sketch or photograph to document your 10 observations and the location.
   c. Research and list 3 facts about each species you identified.
3. Find a quiet spot to sit for at least ten minutes. Take a photo of your sitting spot. Using your five senses identify what you see, hear, smell etc. Close your eyes and listen to the sounds around you. What sounds are natural? Are there human made sounds? What do you feel? Smell? Write a reflection of this experience. This should be two – 3 paragraphs including your observations.
4. Final Reflection: Summarize what you learned. Make connections between this experience and class learning outcomes and learning. This should be two or three paragraphs.

Tools and materials to bring along:

- Binoculars – you can check out a pair from me.
- Drawing tools: sketch pad, notebook, colored pencils, markers, water colors etc.
- Field guides – can be check out from me.
- Digital camera or phone
- iPhone or tape Recorder for recording sounds
- Magnifying Glass – you can check out a hand lens from me.
- Small vials or jars for collecting samples - can be checked out from me.
- Back pack for carrying all your stuff
- Water and snacks
Desert Investigation Activities - DIA  
Nature Journaling Task

Campus field investigations will be conducted to apply the content learned from class to real world experiences on campus. Nature journals and focus questions will be used to guide observations, record inquiry based learning and the practice of science processes.

Record the following information for each entry. The NOTICE section will be the longest and most detailed section of your entry. Use words, graphs and drawings to express your experience. The more detail the better.

1. Complete the DIA task (will be provided by the instructor)  
2. Date and location  
3. What are you observing?  
4. What do you NOTICE? (Describe what you see, using words, numbers and drawing).  
5. What do you WONDER about? (What questions do you have?)  
6. What does it REMIND YOU of? (Make a connection to something else, e.g. another organism, object or system).
Campus field investigations will be conducted to apply the content learned from class to real world experiences on campus. Nature journals and focus questions will be used to guide observations, record inquiry based learning and the practice of science processes.

Record the following information for each entry. The NOTICE section will be the longest and most detailed section of your entry. Use words, graphs and drawings to express your experience. The more detail the better.

1. Complete the DIA task (30 minutes)
   a. Whole Group: Field Cards – in groups, student identify and find the plant on their card.
   b. Whole Group: Each group will take a turn presenting their plant to the group: name, identifying features (creosote; fairy duster; globe mallow; dwarf bottle brush; texas sage, brittle bush)
   INDIVIDUAL
   c. Succulent vs Cactus: Locate and identify a succulent and a cactus. Using colored pencils, draw each giving much detail to each species.
   d. Using the field guide identify the succulent and cactus you drew recording 2 facts for each.
   e. Describe what makes a cactus a succulent and why not all succulents are cacti.
   f. Looking at the two structures explain the difference.

2. Complete Journal Task
   a. Date and location
   b. What are you observing?
   c. What do you NOTICE? (Describe what you see, using words, numbers and drawing).
   d. What do you WONDER about? (What questions do you have?)
   e. What does it REMIND YOU of? (Make a connection to something else, e.g. another organism, object or system).
Make a Herbarium

How To Make A Simple Pocket Herbarium

This is a great project for keeping track of the plants you learn. It’s easy to carry around and won’t take up much space in your backpack or pocket. It’s great to take along on hikes to identify and collect new herbs too!

What you will need:
- 1 sheet of cardstock or construction paper, any color (this will be the cover pages)
- 1 package of 4 x 6 index cards (lined or unlined; white)
- Clear packaging tape
- Hole punch
- Scissors
- Paper cutter or straight edge
- Twine or yarn
- Pens, markers, colored pencils, magazines, to decorate cover

For the cover:
- Cardstock or thicker paper
- Create a cover that is a little larger than the index card.
- Decorate the cover. Be creative! Write your name on it, date - semester, draw plants or decoupage pictures cut from seed catalogs or magazines. Make it yours!
- When you are finished decorating the cover, cut pieces of packaging tape twice the length of the cover and laminate the cover with the tape.

For the inside pages:
Using the hole punch, punch 2 holes at the top of the index cards. To keep everything lined up, I use the sides as a guide and rest the hole punch as far in as I can. I then line it up between the red line and edge. Do this to as many index cards as you’d like to start your book off with. 12 minimum.

Assembling the Herbarium:
- Place all the cards you have punched inside the book cover sheets, cut off two equal pieces of twine or yarn (about 3” should do) and tie with bows. This will allow you to take apart the book as you need it to add or remove pages.
- Now, you are ready to fill it up!

On your herb walk, bring along the Herbarium, a small role of packing tape (extra wide scotch tape may work as long as it is very sticky), small scissors or a pocket knife for cutting the tape and herbs and a pen.

When you find a specimen you want to keep, carefully cut a small sample of every part (i.e. Leaf, flower, seed heads, possibly even roots if small enough) of plant and arrange it on an index card. How you arrange
it is your choice. You may choose to use the blank side of the card and fill it up completely or use 1/2 the front side of the lined card so you can write your information next to it.

Cover the specimen completely with tape carefully flattening the plant as you go. You may put two leaves on the page to show both front and back or fold one halfway over.

Once you have arranged and taped your specimen in place, write the name of the herb down on the first blue line if you know it. If you do not know it, you can do this when you get home and identify it in your herb book or by using the internet. If all else fails, visit a nursery.

Below the common name, write the Latin name. Again, this can also be written down at home. Add the following information to your specimen card.

- the location where you found it
- which parts of the herb are used
- what it’s commonly used for
- what forms it’s used in (i.e. teas, extracts, salves, poultices, etc)
- best time for harvesting
- any cautions for using the herb

Now place your completed card back into the Herbarium. I have found it stays more balanced if I rotate the placement of the herbs on the sides of the card I tape them to. If you choose to place your specimens on one side and your information on the other, this will not be a problem.

To make it easier to refer back to your specimens, alphabetize them as you add them into the file, keeping all the blank cards in the back.

This simple pocket Herbarium will make it easy for you to quickly identify and remember herbs and their uses when you need them!

REQUIREMENTS:

1. Front and Back cover.
   a. Front covered decorated. Name and semester information. Covers = 2pts
2. 12 completed plant cards. (4pts per card = 48 pts.)
   a. a small sample of every part of the specimen
      i. (i.e. Leaf, flower, seed heads, possibly even roots if small enough)
   b. the common and Latin name. Write the Latin name below the common name.
   c. the location where you found it
   d. which parts of the herb are used
   e. what it’s commonly used for
   f. what forms it’s used in (i.e. teas, extracts, salves, poultices, etc)
   g. best time for harvesting
   h. any cautions for using the herb

Total 50 pts
CONTENTS

ACKNOWLEDGMENTS vi

PREFACE viii

ONE WHAT IS A DESERT? 1

TWO TYPES OF DESERT TERRAIN 13

THREE DESERT PLANTS AND ANIMALS 33

FOUR LIFE ON THE ALLUVIAL PLAIN 49

FIVE LIFE AMONG THE SAND DUNES 73

SIX LIFE ON THE BAJADA 89

SEVEN LIFE IN THE CANYONS 113

EIGHT LIFE IN THE DESERT MOUNTAINS 133

NINE PREHISTORIC PEOPLE IN THE DESERT 153

TEN YOU AND THE DESERT 177

ELEVEN WHAT DOES THE FUTURE HOLD? 193

PLACES TO VISIT 198

INDEX 204