Course Change Request

New Course Proposal

Date Submitted: 10/24/18 6:14 pm

Viewing: MARB 669 : Adaptations in Extreme Environments

Last edit: 12/17/18 11:18 am

Changes proposed by: ballr

Faculty Senate Number

Contact(s)

Name	E-mail	Phone
Rachel Ball	ballr@tamug.edu	409-740-4531

Course prefix MARB Course number 669

Department Marine Biology

College/School Galveston Campus

Academic Level Graduate

Academic Level (alternate) Undergraduate

Effective term 2020-2021 Galveston

Complete Course Title
Adaptations in Extreme Environments

Abbreviated Course Title ADAPTATIONS IN EXTREME ENVIRON

Catalog course description
Key metabolic and physiological innovations of extremophile organisms; topics include the molecular biology, biochemistry and physiology of organisms living in extreme environments.

Prerequisites and Restrictions
Graduate classification or approval of instructor.

Concurrent Enrollment No

Should catalog prerequisites / concurrent enrollment be enforced? No

Crosslistings No Crosslisted With

Stacked No Stacked with

Semester Credit Hour(s) 3 Contact Hour(s) (per week): Lecture: 3 Lab: 0 Other: 0 Total 3

Repeatable for credit? No

Three-peat? No

CIP/Fund Code 2613050002

Default Grade Mode Letter Grade (G)

In Workflow

1. **MARB Department Head**
2. **Curricular Services Review**
3. **GV Committee Preparer GR**
4. **GV Committee Chair GR**
5. **GV College Dean GR**
6. **GC Preparer**
7. **GC Chair**
8. **Faculty Senate Preparer**
9. Faculty Senate
10. Provost II
11. President
12. Curricular Services
13. Banner

Approval Path

1. 10/17/18 8:22 pm Jaime Alvarado-Bremer (jaimeab): Approved for MARB Department Head
2. 10/19/18 8:26 am Terra Bissett (t.bissett): Rollback to Initiator
3. 11/21/18 10:58 am Jaime Alvarado-Bremer (jaimeab): Approved for MARB Department Head
4. 11/21/18 11:08 am Terra Bissett (t.bissett): Approved for Curricular Services Review
5. 12/11/18 4:28 pm Nicole Kinslow (wilkinsn): Approved for GV Committee Preparer GR
6. 12/12/18 5:17 pm Antonietta Quigg (quigga): Approved for GV Committee Chair GR
7. 12/12/18 5:20 pm Antonietta Quigg (quigga): Approved for GV College Dean GR
8. 01/03/19 8:36 am LaRhesa Johnson (lrjohnson): Approved for GC Preparer
9. 01/15/19 10:45 am LaRhesa Johnson

(lrjohnson): Approved for GC Chair

Alternate Grade Modes
Satisfactory/Unsatisfactory

Method of instruction: Lecture

Will sections of this course be taught as non-traditional? (i.e., parts of term, distance education): No

Will this course be taught as a distance education course?: No

Is 100% of this course going to be taught in Texas?: Yes

Will classroom space be needed for this course?: Yes

This will be a required course or an elective course for the following programs:

Required (select program)

Elective (select program)

Program(s)
(MS-MARB) Master of Science in Marine Biology
(PHD-MARB) Doctor of Philosophy in Marine Biology

Course Syllabus

Syllabus: Upload syllabus

Upload syllabus: SPRING (2020) MARB 669 - Adaptations in Ext Environments.pdf

Letters of support or other documentation: No

Additional information

Reviewer Comments: **Terra Bissett (t.bissett) (10/19/18 8:26 am):** Rollback: Please update course prerequisites to match form/syllabus.
Terra Bissett (t.bissett) (11/21/18 11:08 am): Updates received.

Reported to state?

Add
GV

Key: 18863

TEXAS A&M UNIVERSITY

SYLLABUS

Course title and number:	MARB 669 – Adaptations in Extreme Environments
Term:	Spring 2020
Meeting times and location:	Time: MWF, 11:30pm – 12.20 pm. Location: CLB 112

CATALOG DESCRIPTION: MARB 669 (3-0). 3 Credits. Key metabolic and physiological innovations of extremophile organisms; topics include the molecular biology, biochemistry and physiology of organisms living in extreme environments.

COURSE DESCRIPTION:

This course presents the key metabolic and physiological innovations of extremophile organisms. Topics include the molecular biology, biochemistry and physiology of organisms living in extreme environments.

Adaptations in Extreme Environments are studied. Comprehensive understanding of the biochemical and physiological adaptations of extremophile organisms will be gained. Key concepts studied include: types of extreme environments, extremophile metabolism and physiology, and adaptive capabilities of threatened species. Student competency will be evaluated using a research paper showcasing interpretation and analysis of existing or new datasets from extremophiles or extreme environments. Students will identify research gaps and propose solutions to advance the study of life in extreme environments. Students will also deliver a class presentation on findings of the research paper

PREREQUISITES:

- Graduate classification or approval of instructor.

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- OUTLINE key biochemical principles.
- IDENTIFY the biological mechanisms responsible for adaptive success in extreme environments.
- RECOGNIZE the interaction between changing environmental conditions and species survival success.
- DESCRIBE the current state of knowledge in the study of extreme environments and extremophiles.

INSTRUCTOR INFORMATION:

Name:	Dr. David Hala
Telephone number:	409-740-4535
Email address:	halad@tamug.edu
Office hours:	Wednesday 3-5 pm or by appointment
Office location:	OCSB 266

TEXTBOOK AND RESOURCE MATERIAL (OPTIONAL):

"Life on the Edge" Michael Gross.

"Physiology and Biochemistry of Extremophiles" edited by Charles Gerday and Nicolas Glansdorff.

GRADING:

90-100% = A
80 - 89% = B
70 - 79% = C
60 - 69% = D
<60% = F

COMPONENTS OF GRADE:

Semester Exams (2)	50% (25%+25%)
Research Paper and Presentation	30%
Final Exam	20%
Total	**100%**

CLASS LECTURE SCHEDULE:

Lecture Topics*
WEEK 1: Course introduction
WEEK 2: The emergence of life
WEEK 3: How to build an animal
WEEK 4: Biological innovations in extreme environments
Week 5: SEMESTER EXAM 1 (25% of final grade)
WEEK 6: Thermophiles and their adaptations
WEEK 7: Psychrophiles and their adaptations
WEEK 8: Halophiles, acidophiles and adaptations to hypoxia
WEEK 9: Spring Break (No Classes)
WEEK 10: Extremophiles of the Anthropocene
Week 11: SEMESTER EXAM 2 (25% of final grade)
WEEK 12: Biotechnological applications of extremophiles
WEEK 13: Exobiology and the search for life in the Universe
WEEK 14: Research Paper Hand-in and Class Presentation (30% of final grade)
WEEK 15: Course wrap-up, final exam review and FINAL EXAM (20% of final grade)

***Syllabus is subject to change.**

RESEARCH PAPER AND PRESENTATION:

1) Research and review data on a topic relevant to extreme environments or extremophiles. You can choose a topic from the list provided below or research an independent topic of your choosing (maybe one related to your own research). The course instructor (Dr. Hala) can also facilitate small independent research projects as feasible.

2) You are allowed to work in teams of 2 or 3 students (no more). For team projects, half of your grade will be based on peer evaluation(s).

3) Compile your analysis of reviewed data or results from a small research project as a 5-page research paper.

4) Present results and findings as a short (10 minutes) class presentation. Please also allow an additional 5 minutes for questions.

5) Have the topic cleared by Dr. Hala prior to beginning work on your research paper and presentation. Dr. Hala will provide feedback and comments to each student and help to formulate the major themes of the research paper. Some possible topics may include one of the following (the instructor can provide input and help with each):

- Simulate and study self-organization in biological networks (using Netlogo).
- Simulate and study planetary-scale atmospheric regulation (using Netlogo).
- Compare and contrast the adaptive capabilities of *Artemia* under temperature or salinity stress.
- Describe and contrast the environments and diversity of hyperthermophile archaea.
- Design and simulate an extremophile operon (using techniques from graph theory).
- Describe likely aquatic or hydrothermal ecosystems on exoplanets or moons (such as Europa).
- Compare food-web networks from contrasting environments.

EXAMS: There will be 2 semester exams and 1 final exam each worth 100 points. All exams are in-class, closed book and must be done independently. No electronic devices will be allowed to be out during the exam. Exams are not cumulative and may contain true/false, multiple choice, short and/or essay questions. Students will have the entire class time to complete an exam. Each question will exhibit points awarded towards exam total. Students may ask for clarification of exam questions from the exam proctor but may not ask for help getting the answer.

MAKE UP POLICY: If an absence is excused, the instructor will either provide the student an opportunity to make up any quiz, exam or other work that contributes to the final grade or provide a satisfactory alternative by a date agreed upon by the student and instructor. If the instructor has a regularly scheduled make up exam, students are expected to attend unless they have a university approved excuse. The make-up work must be completed in a timeframe not to exceed 30 calendar days from the last day of the initial absence. The reasons absences are considered excused by the university are listed below. See Student Rule 7 for details (http://www.tamug.edu/stulife/Academic%20Rules/Rule%207.pdf). The fact that these are university-excused absences does not relieve the student of responsibility for prior notification and documentation. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code.

1) Participation in an activity that is required for a class for which a University excused absence has been issued by the Vice President for Academic Affairs.
2) Death or major illness in a student's immediate family.
3) Illness of a dependent family member.
4) Participation in legal proceedings or administrative procedures that require a student's presence.
5) Religious holy day. NOTE: Prior notification is NOT required.
6) Injury or illness that is too severe or contagious for the student to attend class.
a) Injury or illness of three or more class days: Student will provide a medical confirmation note from his or her medical provider within one week of the last date of the absence (see Student Rules 7.1.6.1)
b) Injury or illness of less than three class days: Student will provide one or both of these (at instructor's

discretion), within one week of the last date of the absence: (i) Texas A&M University Explanatory Statement for Absence from Class form available at http://www.tamug.edu/stulife/Absence%20Statement.pdf or (ii) Confirmation of visit to a health care professional affirming date and time of visit.
7) Required participation in military duties.
8) Mandatory admission interviews for professional or graduate school that cannot be rescheduled.

Other absences may be excused at the discretion of the instructor with prior notification and proper documentation. In cases where prior notification is not feasible (e.g., accident or emergency) the student must provide notification by the end of the second working day after the absence, including an explanation of why notice could not be sent prior to the class.

ATTENDANCE/PARTICIPATION: To successfully complete this course, you should attend all lectures. The textbook covers advanced topics and hence lectures will interpret and synthesize topics presented in the text. In order to obtain a full comprehension of course materials you are encouraged to read the material before coming to class. If a student misses a class, it is the student's responsibility to obtain lecture notes and material from classmates.

ABSENCES: Information concerning absences can be found in the University Student rules Section 7： (http://www.tamug.edu/stulife/Academic_Rules/7_Attendance.html). The University views class attendance as an individual student responsibility. All students are expected to attend class and to complete all assignments/exams. For a University excused absence, the student should contact the Counseling Office to request a letter for the instructor stating the student's absence as excused. Please consult the University Student rules for reasons for excused absences, detailed procedures and deadlines.

INDEPENDENCE, APPROPRIATE REFERENCES AND THEIR CITATION: All aspects of the course must be done independently and NOT as team efforts except where specifically requested by the course teachers. All perceived copying or sharing will be penalized by subtraction of that part of the assignment from the final grade. Plagiarism can include but is not limited to:

- Steal and pass off (the ideas or words of another) as one's own.
- To use (another's production) without crediting the source.
- To commit literary theft.
- To present as new and original an idea or product derived from an existing source.

CLASSROOM BEHAVIOR: The TAMUG Academic Rule 21 states "Texas A&M University supports the principle of freedom of expression for both instructors and students. The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. Classroom behavior that seriously interferes with either (1) the instructor's ability to conduct the class or (2) the ability of other students to profit from the instructional program will not be tolerated. And individual engaging in disruptive classroom behavior may be subject to "disciplinary action". Limit private conversations, use of electronic devices, or anything that could distract the instructor or other students. If you have business to conduct, quietly leave the room. See http://www.tamug.edu/stulife/Academic%20Rules/Rule%2021.pdf for more information.

AGGIE CODE OF HONOR AND ACADEMIC INTEGRITY: For many years Aggies have followed a code of Honor, which is stated in this very simple verse:

"An Aggie does not lie, cheat, or steal, or tolerate those who do."

The Aggie Code of Honor is an effort to unify the aims of all Texas A&M men and women toward a high code of ethics and personal dignity. This code also applies in the classroom. For most, living under this code will be no problem, as it asks nothing of a person that is beyond reason. The Aggie code of honor and the scholastic dishonest section in the TAMUG University Rules will be the standard upon which scholastic integrity is maintained in MARB 669. Refer to the Honor Council Rules and Procedures at http://www.tamug.edu/HonorSystem.

AMERICANS WITH DISABILITIES ACT (ADA) POLICY STATEMENT: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Counseling Office, Seibel Student Center, or call (409)740-4587. For additional information visit http://www.tamug.edu/counsel/Disabilities.html.

STATEMENT ON THE FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA): FERPA is a federal law designed to protect the privacy of educational records by limiting access to these records, to establish the right of students to inspect and review their educational records and to provide guidelines for the correction of inaccurate and misleading data through informal and formal hearings. To obtain a listing of directory information or to place a hold on any or all of this information, please consult the Admissions & Records Office. Items that can never be identified as public information are a student's social security number or institutional identification number, citizenship, gender, grades, GPR or class schedule. All efforts will be made in this class to protect your privacy and to ensure confidential treatment of information associated with or generated by your participation in the class.

STATEMENT ON COURSE EVALUATIONS: The PICA (Personalized Instructor/Course Appraisal) is an online course evaluation for Texas A&M. We highly encourage you to complete an evaluation for each course on your schedule. Student input is a critical component used to improve curriculum and teaching. Each faculty member values your input to improve his/her methodology. Your comments can also significantly impact the mix and membership of faculty. The PICA website is available at http://pica.tamu.edu, your Howdy portal or by scanning:

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