Cover Sheet: Request 10677

MCS4XXX R for functional Genomics

Info

Process	Course|New|Ugrad/Pro
Status	Pending
Submitter	Conesa Cegarra,Ana aconesa@ufl.edu
Created	1/15/2016 4:07:00 PM
Updated	9/26/2016 7:06:56 AM
Description of request	Introductory course to the basics of the R language and to state of the art methods for functional genomics data analysis. Students will learn how to write R scripts, choose appropriate statistical tools and how to use linux environments to analyze high-throughput genomics data.

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Microbiology and Cell Science 514910000	Triplett, Eric		1/16/2016
No document changes					
College	Approved	CALS - College of Agricultural and Life Sciences	Brendemuhl, Joel H	Edits requested by the CALS CC at the 2/12/16 meeting have been addressed. This is a joint course request.	9/26/2016
Replaced ucc_consultUndergraduate.pdf Replaced SyllabusR_for_functional_genomics_Conesa_MCB4934-CB6940_v6.pdf Replaced Syllabus MCB4934 MCB6937_Fall2016.pdf Added Syllabus MCB4934 MCB6937_Fall2016.pdf Added ucc_consultUndergraduate.pdf					9/7/2016 9/7/2016 9/7/2016 9/7/2016 9/7/2016
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			9/26/2016
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

Course|New for request 10677

Info

Request: MCS4XXX R for functional Genomics
Description of request: Introductory course to the basics of the R language and to state of the art methods for functional genomics data analysis. Students will learn how to write R scripts, choose appropriate statistical tools and how to use linux environments to analyze high-throughput genomics data.
Submitter: Brendemuhl,Joel H brendj@ufl.edu
Created: 9/26/2016 7:06:04 AM
Form version: 5

Responses

Recommended PrefixMCS
Course Level 4
Number xxx
Lab Code C
Course TitleR for functional genomics
Transcript TitleR FUNCTIONAL GENOMICS
Effective Term Fall
Effective Year Earliest Available
Rotating Topic?No
Amount of Credit3

Repeatable Credit?No

S/U Only?No
Contact Type Regularly Scheduled
Degree Type Baccalaureate

Weekly Contact Hours 4
Category of Instruction Advanced
Delivery Method(s) Online
Course Description Introductory course to the basics of the R language and to state of the art methods for functional genomics data analysis. Students will learn how to write R scripts, choose appropriate statistical tools and how to use linux environments to analyse high-throughput genomics data.
Prerequisites BSC2010 or BSC2011 or MCB3020 or MCB3023 or BCH4024 or CHM3218 or equivalent AND STA2023 or equivalent
Co-requisites None
Rationale and Placement in Curriculum Modern biology research is heavily data-driven.Appropriate skills on high-throughput data analysis and statistics is increasingly important to prepare students for graduate or medical school, where they will most probably face big data research. The course is placed at an advanced 4000 level to let students reach some maturity in molecular biology and basic statistics concepts that are requisites to address data analysis.
Course Objectives The goal of this course is to train students in some of the most important data analysis languages, commands and strategies that are today used for the analysis of functional genomics data.
By the end of the course, the student should be able to:
1.- write basic R scripts to analyse big genomics datasets.
2.- know the most commonly used statistical approaches for the analysis of genomics data.
3.- identify and use the most important software resources for the analysis of functional genomics data.

4.- perform a complete RNA-seq data analysis pipeline using free software, including linux commands and web-based resources.

Course Textbook(s) and/or Other Assigned ReadingR Programming for Bioinformatics. Robert Gentelman. July 14, 2008 by Chapman and Hall/CRC. ISBN 9781420063677
Bioconductor Case Studies. Hahne, F., Huber, W., Gentleman, R., Falcon, S. ISBN 978-0-387-77240-0
RNA-seq Data Analysis: A Practical Approach. Eija Korpelainen, Jarno Tuimala, Panu Somervuo, Mikael Huss, Garry Wong. September 19, 2014 by Chapman and Hall/CRC. ISBN 9781466595002

Weekly Schedule of Topics Module I: Basics of R
Week 1. Introduction to R. The R language, Rstudio, Bioconductor, Installation of packages, Help in R. Language elements: vectors, matrices, lists, functions, data frames, factors. The "as." Function. Language elements: brackets, curly brackets, arrow, :, ;, comments

Week 2. Basics of R. Assign value to a variable, Browse data, Basic operators, Logic operators, Read and Write, Data generation.

Week 3. Basic Functions I. Basic statistics (mean, max, etc), Compare sets, Order, string manipulations, Matrix Subsetting.

Wee 4. Basic Functions II. Apply family, Loops, Creating functions

Week 5. Graphs in R. Plot functions, graphical parameters, export graph.

Module II: Statistics for genomics
Week 6. Hypothesis testing. Sample vs population aspects of genomics experiments, Reference distributions used in genomics, pvalue, sensitivity and specificity of genomics tests, applying t-test to thousand of features

Week 7. Univariate statistics in genomics Linear-models for genomics data , Fisher-exact test, Correlation, Willconxon Kolmogorov–Smirnov test.

Week 8. Multivariate statistics in genomics. Clustering of gene profiles, Heatmaps, PCA, Multiple testing, Bootstrap.

Module III: Functional genomics
Week 9. NGS and Functional Genomics. Sequencing machines, *.seq assays
Large NGS projects, Repositories NGS data

Week 10. Introduction to Linux. Bash commands, Install programs, hipergator environment.

Week 11. RNA-seq analysis I. Experimental design, RNA-seq pipelines
Quality control: fastqc

Week 12. RNA-seq analysis II Mapping, IGV, Sam/Bed tools,

Week 13. RNA-seq analysis III Assembly

Week 14. Differential expression. Quantification, 2 class-comparisons, Time series analysis

Week 15 Functional profiling Functional databases, Functional Enrichment (DAVID), GSA, Network Analysis. Functional annotation: bast2go

Week 16. Functional annotation: bast2go

Grading Scheme Each week has assignments and quizzes that account for 260 points.
There are three additional projects at the end of each module.
Project I after completion Module I counts for 200 points.
Project I after completion Module I counts for 240 points.
Project I after completion Module I counts for 300 points.

Total points are 1000
Instructor(s) Ana Conesa

Syllabus for MCB4934/MCB6937
R for Functional Genomics
Fall 2016

INSTRUCTOR: Dr. Ana Conesa

Email: aconesa@ufl.edu

Office hours: Tuesday and Friday 4:00-5:00 pm.

Office location: Genetics Institute 351b

Course location: ON-LINE

DESCRIPTION. Introductory course to the basics of the R language and to state of the art methods for functional genomics data analysis. Students will learn how to write R scripts, choose appropriate statistical tools and how to use linux environments to analyze high-throughput genomics data.

COMMUNICATION WITH INSTRUCTOR: Students can either formulate questions via CANVAS email or personally at office hours. Skype discussion sessions will be organized upon request and arranged according to instructor availability. The Skype ID for the course is **MCB4934MCB6937.** Students who cannot attend regular office hours may contact the instructor for an alternative appointment.

PREREQUISITES: Students should have background knowledge in biology and genetics. Students are expected to be familiar with the principles of gene expression, the first dogma of molecular biology and the basic structures of the cell. Courses that meet these criteria are: BSC2010, BSC2011, MCB3020, MCB3023, BCH4024, PCB4522 or CHM3218. Students should have basic knowledge in statistics and are expected to be acquainted with basic summary statistics concepts such as mean, standard deviation, distribution, correlation, histograms, scatter plots, etc. Courses that meet these criteria are: STA2023, STA3024, STA6166 or STA6167. Students who have not taken any of the mentioned courses may enroll if they demonstrate proficiency with the listed topics. Contact the instructor and obtain her approval prior to enrolling.

MOTIVATION FOR THE COURSE: Today's genome research is fundamentally quantitative. New advances in our understanding of genome function and its applications to areas such as personalized medicine or biotechnology have come from the generation and processing of large volumes of data. The progress of this field largely depends on new genome professionals that are comfortable with the notion of

Big Data and skilled in the analysis of large datasets beyond the solutions provided by existing software packages. This implies that genome biology students need to become proficient in programming and developed the analytical skills to query and extract information from large volumes of data. The goal of this course is to train students in some of the most important data analysis languages, commands and strategies that are used today for the analysis of functional genomics data.

COURSE CONTENT: This is a 3 module, 3 credits course that introduces students to the basics of R language. It teaches the most important statistical concepts and algorithms used in functional genomics data analysis. Most of the course will deal with R scripts and packages although other software resources may be used for specific classes.

The three modules are:
Module I: Basics of the R language
Module II: Statistics for functional genomics
Module III: Functional genomics data analysis

The course is provided as an undergraduate (4000) and a graduate (6000) level class. For the 6000 level class, students will need to complete two additional lecture modules and essays. The course will be entirely web-based, and all lectures will be delivered on-line. The course lecture materials, on-line activities and assignments will be posted on a weekly basis with new content being available on Mondays. While new material will be added at the beginning of week, past materials will be maintained on-line for students to review if necessary.

COURSE OBJECTIVES:
By the end of the course, the student should be able to:
For the 4000 level class (MCB4934):

1. Write basic R scripts to analyze big genomics datasets
2. Identify and use the most important software resources for the analysis of functional genomics data.
3. Handle large genomics data in Linux environments
4. Perform a complete RNA-seq data analysis pipeline using free software, including linux commands and web-based resources.

For the 6000 level class (MCB6937), 4000 level objectives hold, plus students will also:

5. Learn advanced plots in R
6. Write a basic R package
7. Include functional profiling in their analyses.

COURSE SCHEDULE:

MODULE I Basic R		
Week start	**Topic**	**Description**
8/22/2016	Introduction to R	The R language, RStudio, Bioconductor, Installation of packages, Help in R Language elements: vectors, matrices, lists, functions, data frames, factors. The "as." Function. Language elements: brackets, curly brackets, arrow, :, ;, comments
8/29/2016	Basics of R	Assign value to a variable, Browse data, Basic operators, Logic operators, Read and Write, *Data generation*
9/5/2016	Basic Functions I	Basic statistics (mean, max, etc), Compare sets, Order, string manipulations, Matrix Sub-setting
9/12/2016	Basic Functions II	Apply family, Loops, *Creating functions*
9/19/2016	Graphs in R	Plot functions, graphical parameters, *export graphs*
GRADUATE students only (MCB6937)	Advanced graphs	ggplot()

MODULE II Statistics for genomics		
Week start	**Topic**	**Description**
9/26/2016	Hypothesis testing	Sample vs population aspects of genomics experiments, reference distributions used in genomics, pvalue, sensitivity and specificity of genomics tests, applying t-test to thousands of features
10/3/2016	Univariate statistics in genomics	Linear-models for genomics data , Fisher-exact test, Correlation, *Willconxon*

		Kolmogorov–Smirnov test
10/10/2016	Multivariate statistics in genomics	Clustering of gene profiles, Heatmaps, PCA, Multiple testing, *Bootstrap*
GRADUATE students only (MCB6937)	Create an R package	S4 classes, package skeleton, document packages

MODULE III Functional genomics		
Week start	**Topic**	**Description**
10/17/2016	NGS and Functional Genomics	Sequencing machines, *.seq assays Large NGS projects, Repositories NGS data
10/24/2016	Introduction to Linux	Hipergator environment, Bash commands, Install programs
19/30/2016	RNA-seq analysis I	Experimental design, RNA-seq pipelines Quality control: fastqc
11/07/2016	RNA-seq analysis II	Mapping, IGV, Sam/Bed tools,
11/14/2016	RNA-seq analysis III	*Assembly*
11/21/2016	Differential expression	Quantification, 2 class-comparisons, *Time series analysis*
11/28/2016	Functional profiling	Functional databases, Functional Enrichment (DAVID), *GSA, Network Analysis*
12/5/2016	Functional annotation	*Blast2GO*

SOFTWARE: Students will need to install the following free software: R (http://www.r-project.org), RStudio (http://www.rstudio.com/), IGV (https://www.broadinstitute.org/igv/) and Blast2GO (www.blast2go.com). Additional specific open access programs for functional genomics data analysis will be introduced at their corresponding lectures. Students will need to request a Hipergator account in module III, lecture 10. To do so go to: http://www.rc.ufl.edu/help/account-request/

All faculty, staff and students of the university are required and expected to obey

the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Such violations are also against university policies and rules, disciplinary action will be taken as appropriate. If you need assistance with technical requirements, contact the UF Computing Help Desk at (352)392-HELP(4357).

RECOMMENDED BOOKS: The course does not require a textbook. Recommended books include:

- *R Programming for Bioinformatics*. Robert Gentelman. July 14, 2008 by Chapman and Hall/CRC. ISBN 9781420063677
- *Bioconductor Case Studies*. Hahne, F., Huber, W., Gentleman, R., Falcon, S. ISBN 978-0-387-77240-0
- *RNA-seq Data Analysis: A Practical Approach.* Eija Korpelainen, Jarno Tuimala, Panu Somervuo, Mikael Huss, Garry Wong. September 19, 2014 by Chapman and Hall/CRC. ISBN 9781466595002

COURSE STRUCTURE AND EVALUATION:
Lectures and exercises will be posted weekly. Practice quizzes will be used for students to monitor their progress. Students must complete exercises assigned each week by the Sunday of that week. Each module will be evaluated by a module project consisting of writing a script with functions and concepts discussed in the module, together with a report document that summarizes the results of the analyses. Students will be given between 2 and 3 weeks to complete each module project. Students will be asked to create a personal dataset during the first 3 weeks of the course that will be used in Module I and Module II of the course.

Weekly exercises: 400 points
Module projects: 600 points

Each module will be evaluated independently and a final grade will be determined by the summation of points obtained in each module. Module projects I, II, and III are worth 175, 225, and up to 300 points respectively. Extra points can be earned by including essays for additional specific subjects of the course.

Evaluation Module I: Students will create a personal dataset with at least 10 variables and 20 observations. Students will write an R script to analyze proprietary data. At least 20 different functions have to be used, including functions of weeks 4 and 5. The script will start with an explanation of the data, followed by the analysis to be performed and the conclusions of the analysis. Points: 175. 30 extra points can be earned by including 2 functions from: *data generation, creating functions, export graphs.*

Additional assignments for Module I, **MCB6937 only:** Same exercise as before, but graphical output should include at least 2 ggplot functions.

Evaluation Module II: Students will be given a gene expression dataset. They will create an R script to analyze these data. At least 2 univariate and 2 multivariate methods should be used. Script will start with an explanation of the data, followed by the analysis to be performed and the conclusions of the analysis. Points: 225. 50 extra points by including either: *Willconxon, Kolmogorov–Smirnov test or Bootstrap.*

Additional assignments for Module II, **MCB6937 only:** Same exercise as before, plus creation of a simple R package with the functions used in Module II.

Evaluation Module III: Students will be given an RNAseq project to complete RNA-seq analysis pipeline from Quantification to Differential expression. Students may also request to use their own data, which has to be approved by the instructor. Student projects will start with an explanation of the data, followed by the analysis to be performed and the conclusions of the analysis. Points: 300. 50 extra points by including either: *GSA, Network Analysis, Blast2GO.*

Additional assignments for Module III, **MCB6937 only:** In addition of previous exercise, 6000 level students will include Functional Profiling analyses of their data.

GRADING POLICIES:

Grading Scale Numerical Equivalents	
A = 900 points or above	C = 690-719
A- = 860-899	C- = 660-689
B+= 830-859	D+= 630-659
B = 790-829	D = 600-629
B- = 750-789	D- = 570-599
C+= 720-749	E = 560 or below

Information on current UF grading policies for assigning grade points can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

ATTENDANCE AND MAKE-UP WORK: This is an on-line course, therefore no attendance requirements are applicable. Students are expected to follow on-line material posted on a weekly basis and submit weekly assignments on time. There is no specific make-up work. Students can recover points by completing exercises where extra points are possible. Students experiencing difficulties with completing assignments on time may contact the instructor in exceptional situations and alternative evaluation options may be considered. Prerequisite information and credit

suitability can be found in the course catalog. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies and can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

NETIQUETTE GUIDE FOR ONLINE COURSES: It is important to recognize that the on-line classroom is in fact a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for on-line behavior and interaction are known as netiquette. More information on netiquette for on-line courses can be found here:
http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf

ACADEMIC HONESTY: Remember that you committed yourself to academic honesty when you registered at the University of Florida. All students are bound to:

The Honor Pledge
We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied:
"On my honor, I have neither given nor received unauthorized aid in doing this assignment."

Academic Honesty Guidelines: "All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University. The academic community of students and faculty at the University of Florida strives to develop, sustain and protect an environment of honesty, trust, and respect. Students are expected to pursue knowledge with integrity. Exhibiting honesty in academic pursuits and reporting violations of the Academic Honesty Guidelines will encourage others to act with integrity. Violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions in paragraph XIV of the Student Code of Conduct."
The Honor Code (https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx) specifies a number of behaviors that are in violation of this code and the possible sanctions.

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic

integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code. If you are aware of a climate that promotes academic dishonesty, please notify the instructor, the Student Honor Court (392-1631) or the Cheating Hotline (392-6999).

SOFTWARE USE: Students will need to install four free software packages (R, RStudio, IGV and Blast2GO). All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Such violations are against university policies and disciplinary action will be taken as appropriate.

CANVAS (http://elearning.ufl.edu): Here you will find the syllabus, gradebook, files, class announcements, and other pertinent info for the course. It is your responsibility to check Canvas often to make sure that you do not miss important announcements and to ensure that your grade book is accurate. For computer assistance, visit http://helpdesk.ufl.edu/.

STUDENTS WITH DISABILITIES: The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students with disabilities requesting accommodations should first register with the Disability Resource Center (0001 Reid Hall, 352-392-8565, http://www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible.

CAMPUS RESOURCES: Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance. University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/

1. Counseling Services: University Counseling Center, 301 Peabody Hall, 392-1575
2. Personal and career counseling: Student Mental Health, Student Health Care

Center, 392-1171
3. Sexual counseling: Sexual Assault Recovery Services (SARA), Student Health Care Center, 392-1161
4. Career development assistance and counseling: Career Resource Center, First Floor Reitz Union,
392-1601, www.crc.ufl.edu/

For **emergencies** call the University of Florida Police Department: 392-1111 or 911.

U MATTER, WE CARE: Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1. U Matter We Care, www.umatter.ufl.edu/

EVALUATIONS: Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted on-line at https://evaluations.ufl.edu. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results. Each on-line distance learning program has a process for, and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level. See http://distance.ufl.edu/student-complaints for more details

DISCLAIMER: This syllabus represents my current plans and objectives. If those need to change as the semester progresses, then the changes will be communicated to the class clearly.

UF UNIVERSITY of FLORIDA

UCC: External Consultations

External Consultation Results (departments with potential overlap or interest in proposed course, if any)

Department	Name and Title
Forest Resources and Conservation	Tim White, Director School of Forest Resources and Conservati
Phone Number	**E-mail**
352-846-0850	thwhite@ufl.edu

Comments

Potential overlap with course ALS5932. Letter of no overlap is attached.

Department	Name and Title
Phone Number	**E-mail**

Comments

Department	Name and Title
Phone Number	**E-mail**

Comments

To whom it may concern,

I am one of the instructors of the course ALS 5932 Introduction to Applied Statistics for Agricultural and Life Sciences. I have talked to Ana Conesa, the instructor of MCB4934/CB6940 Analysis of functional genomics data, regarding a potential overlap between these two courses.

Ana has shared with me the syllabus of her course. Based on this document and her explanation, it seems that both of these courses just overlap substantially in regards to module I of MCB4934/CB6940, which provides an introduction to R. The focus of the subsequent modules of MCB4934/CB6940 is on statistics applied to genomics, something that we do not cover in our course. Finally, Ana mentioned that the majority of her students (approx. 70%) are undergraduate students, differently from ours that just includes graduate students.

In summary, I believe these courses do not overlap considerably because their audiences are different, both from a scientific topic perspective (genomics vs. general life science students) as well as academic stage (undergraduate vs. graduate students).

Best regards,

_____

Denis Valle

From: White,Tim tlwhite@ufl.edu
Subject: RE: Letters no overlap
Date: 13 October 2015 at 13:22
To: Eric Triplett ewtriplett@gmail.com
Cc: Valle,Denis R drvalle@ufl.edu, Conesa Cegarra,Ana aconesa@ufl.edu

Eric
I believe that the R course you are proposing is needed and important. There is no significant overlap with our classes.
The SFRC supports this new class.
Tim

Tim White
Professor and Director
School of Forest Resources and Conservation
IFAS, University of Florida
Gainesville, FL, 32611
Phone: 352-846-0850
http://sfrc.ufl.edu

UF IFAS
UNIVERSITY of FLORIDA

From: Eric Triplett [mailto:ewtriplett@gmail.com]
Sent: Monday, October 12, 2015 11:54 AM
To: White,Tim
Cc: Valle,Denis R; Conesa Cegarra,Ana
Subject: Fwd: Letters no overlap

Dear Tim,
Please see attached a syllabus for a course that is being taught experimentally this semester. We are proposing to make this course, R for functional genomics, a permanent part of our curriculum at the undergraduate and graduate levels. My understanding is that Dr. Denis Valle teaches a course in R but we don't think these is any overlap between your course and our proposed course. If you agree, can you send me an email to the effect that our course causes little or no enrollment overlap with your teaching efforts? If you see significant overlap, I am happy to discuss.
Many thanks,
Eric

Prof. Eric W. Triplett, Chair
Department of Microbiology and Cell Science
Institute of Food and Agricultural Sciences
University of Florida
1355 Museum Road, P.O. Box 110700
Gainesville, FL 32611 USA
1-352-392-5430 (phone)
1-352-392-5922 (fax)