The Mathematical Sciences in Obesity

Module identification color codes		
Introduction to math method		
Application of method to obesity		
Hands-on interactive session		
Open problems		
Time	**Speaker**	**Topic**
Day 1 - Mon 6/22/2015		
8:15 - 8:45	Diana Thomas, Montclair	Registration
8:45 - 9:45	David Allison & Andrew Brown, UAB	Introductory remarks: A Comedy of Errors
9:45 – 10:30	Steven Heymsfield, PBRC	Overview of state of the field of obesity and mathematical sciences
10:30 – 11:30	David Allison, UAB	Overview of funding approach at NIH and other federal granting agencies
Lunch 11:30-12:45		
Module 1: Outcomes in Obesity Randomized Controlled Trials (RCTs)		
1:00-1:45	David Allison, UAB	Introduction to RCTs and their quantitative analysis
2:00-2:45	David Allison & Peng Li, UAB	Missing data in randomized clinical trials
3:00-4:00	Peng Li, UAB	Design & Cluster Randomized Trials and Accommodating Clustering in Animal Studies
4:00-5:30	Moderated by Senior Researchers	Roundtable Session††
Day 2 - Tue 6/23/2015 **Module 2: Modeling weight change using energy balance**		
9:00 – 9:45	Diana Thomas, Montclair	Introduction to Energy Balance Models
10:00 – 10:45	Kevin Hall, NIH	Macronutrient & Energy Balance Models
11:00-11:30	John Apolzan, PBRC	Models delivered using smart phone technology
Lunch 11:30-12:45		
Module 3: Modeling Policy Effect on Obesity		
1:00-1:45	Stephen T Mennemeyer PhD, UAB	Using Simulation to Estimate Economic Effects: Examples from Cost-Effectiveness of Obesity Programs
2:00-2:45	Thomas Flottemesch PhD, HealthPartners	Modeling of policies for childhood and adult obesity management
3:00-4:00	Tapan Mehta PhD, UAB	Open problems
4:00-5:30	Moderated by Senior Researchers	Roundtable Session††
Day 3 - Wed 6/24/2015 **Module 4: Modeling Obesity and Economics**		
9:00 - 09:45	Adam Knowlden, Univ Alabama	Overview
10:00 – 10:45	Bisakha Sen PhD, UAB	Bringing Tools from The Field of Economics to Better Understand Disparities in Obesity
11:00-11:30	Gregory Price, Morehouse	The Economic Anthropometry Approach to Obesity
11:30-12:00	Adam Knowlden, Univ Alabama	Open problems
Lunch 12:00-1:00		

Day 3 - Wed 6/24/2015 **Module 5: Modeling Behavioral Responses in Obesity**		
1:00-1:45	Diana Thomas, Montclair	Overview of the state of the field
2:00-2:45	Daniel Rivera, Arizona State	Dynamic modeling of weight and body composition change using the Theory of Planned Behavior and Self-Regulation.
2:45-3:45	Corby Martin, PBRC	Open Problems
4:00-5:30	Moderated by Senior Researchers	Roundtable Session††
Day 4 - Thu 6/25/2015 **Module 6: Sensor Models in Obesity**		
9:00 – 9:30	Edward Sazonov, Alabama, Tuscaloosa	Overview of the field
9:30 – 10:30	Adam Hoover, Clemson University	Tracking Wrist Motion to Monitor Energy Intake
10:30 – 11:30	Jon Moon, MEI Research	Mathematics of room calorimeters
Lunch 11:30-12:45		
Module 7: Scaling Laws and Obesity		
1:00-1:20	Steven Heymsfield, PBRC	Overview of the field
1:25-2:05	Dave Nelson, Univ S Alabama	Allometric Scaling & Whole-Animal Energy Balances
2:10–2:50	Abdul-Aziz Yakubu, Howard Univ	Mathematical energetics of organisms in ecologies
3:00-4:00	Steven Heymsfield, PBRC	Open Problems
4:15-5:30	Moderated by Senior Researchers	Roundtable Session†† Preparation for student presentations
Day 5 - Fri 6/26/2015 **Module 8: Statistical Modeling in Genetics**		
9:00 – 09:45	Hemant Tiwari, UAB	Genetic association analysis of 30 genes related to obesity in a European American population: Overview
9:30 – 10:45	Gustavo de los Campos, Michigan State University	Prediction of expected years of life using whole-genome markers
11:00 – 11:30	Audrey Hendricks, UC Denver	Methods for studying rare variants in next generation sequencing data
11:30 – 12:00	Audrey Hendricks, UC Denver	Open problems
Lunch 12:00-1:00		
1:00-1:45	**Student Presentations**	
2:00-2:45		
3:00-3:30		
3:30-4:00		
4:15-5:30		
††Roundtable session will be used to develop projects through activities such as preparing and abstract or specific aims page		

Course Website: http://www.soph.uab.edu/energetics/shortcourse/second
http://www.soph.uab.edu/energetics/shortcourse/second/application

We would like to thank our sponsors for their support:

NIH National Institute of Diabetes and Digestive and Kidney Diseases

Office of Energetics

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