Module title	**Foodomics**
Code	F3
Degree Programme	Master of Science in Life Sciences
Group	Food
Workload	3 ECTS (90 student working hours: 42 lessons contact = 32 h; 58 h self-study)
Module Coordinator	**Name**: Dr. Wolfram Brück (HES-SO, Sion) – Representing FNH (BFH) **Phone**: +41 (0)27 606 86 64 **Email**: wolfram.bruck@hevs.ch **Address**: HES-SO Valais//Wallis, Institute of Life Technologies, Route du Rawyl 64 1950 Sion
Lecturers	• Dr. Wolfram Brück • Guest lecturers
Entry requirements	Preparatory reading list given before course begins and unmarked online pre-test on reading material Preparatory work for terminology and online pre-test
Learning outcomes and competences	After completing the module, students will be able to: • Explain digestive tract anatomy & function; • Explain a nutrient's absorption, metabolism, elimination or biological effects; • Evaluate current nutrigenomic, microbiome and metabolome methods (16S sequencing and metagenome sequencing (NGS-based), NMR, HPLC-MS, GC-MS); • Develop strategies to evaluate and analyse large data sets (data mining); • Formulate their own ideas on the impact of dietary regulation of gene function on human disease; • Explain the basics of systems biology.
Module contents	• Digestive tract anatomy & function • Nutrient absorption, metabolism, biological effect and elimination • Nutrition and the human microbiome in health and disease - I: Overview - II: Gut-Brain Axis and autoimmune diseases • How the Microbiome Influences Host Diet Metabolism • How Diet Impacts the Microbiome • Pre- and Probiotics • Microbiota-Targeted Therapies: An Ecological Perspective • Tools and Models for Assessment of the Microbiome and Metabolome • Dietary regulation of gene function • Metabolic disorders • Working with large data sets: Strategies, Programs, Formatting • Functional Foods and personalised nutrition • Regulatory Framework & Challenges • Systems biology
Teaching / learning methods	Self-study, group work, student and instructor presentations, instructor lead discussions, case studies

Assessment of learning outcome	1. Presentation of group work (40%) 2. Written final examination, closed book (60%)
Format	7-weeks
Timing of the module	Spring semester, CW 8-14
Venue	Bern
Bibliography	<u>Pre-course reading</u> Pray L, Pillsbury L, Tomayko E, 2013. The Human Microbiome, Diet, and Health. The National Academic Press, Washington D.C., USA (doi.org/10.17226/13522.) <u>Course material:</u> Choffnes ER, Olsen LA, Mack A, 2014. Microbial Ecology in States of Health and Disease. The National Academic Press, Washington D.C., USA (doi.org/10.17226/18433) Ferguson LR, 2013. Nutrigenomics and Nutrigenetics in Functional Foods and Personalized Nutrition. CRC Press, Boca Raton, USA (ISBN9781439876800) Olds W, 2014. Health and the Gut: The Emerging Role of Intestinal Microbiota in Disease and Therapeutics. CRC Press, Boca Raton, USA (ISBN 9781771880725)
Language	English
Links to other modules	The present module complements specialisation modules of BFH FNH-4 “Food for Specific Target Groups“ and FNH-5 “Food Ingredients“, where more specific subjects are addressed
Comments	
Last Update	23.02.2018