

Preliminary Short Course Program

(November 2012 - May 2013)

1. Short course schedule

As part of the capacity building program of the Jeddah Transect Project, four short courses will be held at King Abdulaziz University by scientists from Kiel (Tab. 1) in 2012-2013. Each course will be of weekly duration and involve teaching units for KAU scientists, students and technicians.

Tab. 1: Short Courses Overview

Jeddah Transect Project Short Courses 2012/2013				
Project	Course	Lecturer	Date	Venue
1	<p>“Marine Biogeochemistry – Stable isotopes”</p> <p><u>Staff Lecture:</u> “Exploring and exploiting the deep ocean – the necessity of new monitoring concepts”</p> <p><u>Student Course:</u> “Early diagenesis”</p> <p><u>Technician Course:</u> Marine Chemistry</p>	Dr. M. Schmidt	April 20-24, 2013	KAU
2	<p><u>Staff Lectures:</u> Aspects of volcanics and tectonics of the Red Sea</p> <p><u>Student and Technician Course:</u> “Plate tectonics and stratigraphy of the Red Sea”, “detailed bathymetry and tectonics of Red Sea seafloor, and “Hydrothermal exploration of the Red Sea rift”.</p>	<p>Prof. Dr. C. Devey</p> <p>Dr. N. Augustin</p> <p>M.Sc. Froukje van der Zwan</p>	May 4 -8 , 2013	KAU
3	<p>“Doing Science”</p> <p><u>Staff Lecture:</u> “Noise and variability in nature: nuisance or blessing?”</p> <p><u>Student Course:</u> “Conceiving experiments”</p> <p><u>Technician Course:</u> “Biological versus technical replication. Protocols. Data storage.”</p>	Prof. Dr. M. Wahl	February 2 - 6, 2013	KAU
4	<p><u>Staff Lecture:</u> “Jeddah Coastal Information System: Set-up and Results”</p> <p><u>Student Course:</u> “Modelling Marine Environments”</p> <p><u>Technician Course:</u> “Overview of devices and operation restrictions”</p>	<p>Prof. Dr. R. Mayerle</p> <p>Dr. G. Bruss</p> <p>J. M. Fernandez Jaramillo</p>	November 17-21 2012	KAU

2. Details of Short Course

Subproject 1: Marine Chemistry:

Lecturer: Dr. Mark Schmidt

1. Lecture for Staff

Title: *“Exploring and exploiting the deep ocean – the necessity of new monitoring concepts”*

2. Course for Students

Title: *Early diagenesis*

Lecturer: Dr. Mark Schmidt

Description: The two-day course consists of lectures and mathematical exercises

Content:

Day 1:

Lesson I: Introduction, basics, sampling techniques

Lesson II: Benthic element cycling 1, mathematical exercise)

Lesson III: (Benthic element cycling 2, mathematical exercise)

Day 2:

Lesson IV: Quantification of early diagenetic processes

Lesson V: Application of stable isotope chemistry

3. Course for Technicians

Title: *Marine Chemistry*

Lecturer: Dr. Mark Schmidt

Description: The two-day course consists of lectures and laboratory exercises

Content:

Day 1:

Lesson I: Introduction

Lesson II: Laboratory equipment in marine chemistry 1, laboratory equipment

Lesson III: Laboratory equipment in marine chemistry 2, offshore devices

Day 2:

Lesson IV: New development in trace gas analysis

Lesson V: Mathematical tools

Literature:

Hoefs J. (2009), Stable Isotope Geochemistry, Springer Berlin.

Schulz H. D., Zabel M. (2006) Marine Geochemistry, Springer Berlin.

Subproject 2: Marine Geology

Lecturers: Prof. Dr. Colin Devey, Dr. Nico Augustin, M.Sc. Froukje van der Zwan

1. Lecture for Staff

The KAU staff short course contribution is scheduled for 2 days.

Day 1:

Title: *Generation of the oceanic crust, influence of magmatism and tectonics, variations of processes with spreading rate and through geological time.* (Lectures and small practical exercises to strengthen the understanding)

Lecturer: Prof. Dr. Colin Devey

Day 2:

Title: *Hydrothermalism and alteration of the crust. Mineral deposit types, fluid flow zones, mining prospects in the ocean.* (Lectures and small practical exercises to strengthen the understanding)

Lecturer: Prof. Dr. Colin Devey

2. Course for Students and Technicians:

Lecturer: Prof. Dr. Colin Devey, Dr. Nico Augustin, Froukje van der Zwan

Day 1:

Lecture title: *Plate tectonics and stratigraphy of the Red Sea. Introduction to rock types present (lecture).*

Exercise: Microscope exercise (we will produce some thin sections for this and will need polarizing microscopes for this - are they available at KAU?)

Day 2:

Lecture title: *Detailed bathymetry and tectonics of Red Sea seafloor.*

Exercise: Influence of tectonics on magma chemistry

Day 3:

Lecture title: Hydrothermal exploration of the Red Sea rift

Exercise: Determine where to prospect for mineral deposits.

Subproject 3: Marine Biology

Lecturer: Prof. Dr. Martin Wahl

1. Lecture for Staff:

The KAU staff short course contribution is scheduled for 1 day.

Title: *Noise and variability in nature: nuisance or bless?*

Lecturer: Prof. Dr. Martin Wahl

2. Course for Students:

Lecturer: Prof. Dr. Martin Wahl

Day 1 and 2:

Lecture title: *Conceiving experiments*

3. Course for Technicians:

Lecturer: Prof. Dr. Martin Wahl

Day 1:

Lecture title: *Biological versus technical replication.*

Day 2:

Lecture title: *Protocols and data storage.*

Subproject 4: Coastal Oceanography

Lecturers: Prof. Dr. R. Mayerle, Dr. G. Bruss, M.Sc. J. M. Fernandez Jaramillo

1. Lecture for Staff

Title: *Jeddah Coastal Information System: Set-up and Results*

Lecturer: Prof. Dr. Roberto Mayerle

Content: 2-hour lecture on the newly installed Jeddah Coastal Information System

2. Course for Students:

Title: *Modelling Marine Environments*

Lecturer: Dr. Gerd Bruss

Content:

Day 1

1. General introduction to hydrodynamic numerical modelling
2. Overview of modelling systems
3. Basic principles
4. Application examples

Day 2

1. Case Study - Red Sea / Jeddah Model of CMS
2. Model Development
3. Data Collection and Integration
4. Calibration and Validation
5. Model Operation and Application Examples

3. Course for Technicians

Title: *Operation and Maintenance of the Devices*

Lecturer: J. M. Fernandez Jaramillo

Content:

Day 1 (Lectures)

1. Overview of devices and operation restrictions.

Day 2 (Field work)

1. Maintenance and Installation.
2. Field Visit.
3. Data Retrieval.