

module code /  
module title

## D-CPMO/ Cell Physiology of Marine Organisms: Cellular Energy Budget and Metabolic Fingerprinting

 date / version of the module  
description

26.10.2021

1 INFORMATION ON THE MODULE	
1a	module code D-CPMO
1b	module title (German title) Klicken Sie hier, um Text einzugeben.
1c	module title (English title) Cell Physiology of Marine Organisms: Cellular Energy Budget and Metabolic Fingerprinting
1d	credit points 6
1e	responsible for the module Prof. Dr. Janine Kirstein
1f	type of module elective module
1g	programs using the module M.Sc. Biochemistry and Molecular Biology and as Module MB E-6 in the M. Sc. Marine Biology
1h	organizational unit offering the module
1i	content-related prior knowledge or skills A basic understanding of animal physiology and energy metabolism is recommended
1j	learning contents Deepening the knowledge of cell physiology of marine ectotherms. Topics will be: <ul style="list-style-type: none"> <li>· Environmental impact on function of cells, mitochondria, enzymes</li> <li>· Aerobic and anaerobic energy metabolism</li> <li>· Analytical NMR techniques</li> <li>· Cellular energy budget and metabolite status</li> </ul>

		<p>Methods being used:</p> <ul style="list-style-type: none"> <li>Isolation/Preparation of primary cells/tissue extracts</li> <li>Respirometry</li> <li>Photometry</li> <li>Nuclear Magnetic Resonance (NMR) spectroscopy</li> </ul>																																																																		
1k	learning outcomes/ competencies/ targeted competencies	<ul style="list-style-type: none"> <li>Students understand the principles of cell metabolism under physiological control and stress conditions</li> <li>Students are able to conduct and perform scientific experiments</li> <li>Students can prepare primary cell/tissue extracts</li> <li>Students can conduct NMR spectroscopy, photometric and respiration measurements</li> <li>Students can understand, evaluate, present and discuss scientific data</li> </ul>																																																																		
1l	<p>calculation of student workload (part a: calculation of presence time and working hours)</p>	<p><b>The total amount of the presence time and working hours of the module has to be calculated additionally in the detailed calculation a) to c).</b></p> <p><b>a) detailed calculation:</b> <b>SWS / presence time/working hours in each course of the module</b></p> <table border="1"> <tr> <td><input checked="" type="checkbox"/></td> <td>lecture(s) with</td> <td>0,5</td> <td>SWS/ contact hours</td> <td>7</td> <td>hours of presence time</td> </tr> <tr> <td><input checked="" type="checkbox"/> 1</td> <td>seminar(s) with</td> <td>1,5</td> <td>SWS/ contact hours</td> <td>21</td> <td>hours of presence time</td> </tr> <tr> <td><input type="checkbox"/></td> <td>exercise(s) with</td> <td></td> <td>SWS/ contact hours</td> <td></td> <td>hours of presence time</td> </tr> <tr> <td><input type="checkbox"/></td> <td>internship(s) with</td> <td></td> <td>sum of working hours</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>seminar(s) with</td> <td></td> <td>SWS/ contact hours</td> <td></td> <td>total hours of presence time</td> </tr> <tr> <td><input checked="" type="checkbox"/> 1</td> <td>laboratory/laboratories with</td> <td>4</td> <td>SWS/ contact hours</td> <td>56</td> <td>total hours of presence time</td> </tr> <tr> <td><input type="checkbox"/></td> <td>tutorial(s) with</td> <td></td> <td>SWS/ contact hours</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>excursion(s) with</td> <td></td> <td>SWS contact hours in total</td> <td></td> <td>working hours</td> </tr> <tr> <td><input type="checkbox"/></td> <td colspan="5">other form of course (e.g. block seminar), namely this:</td> </tr> <tr> <td colspan="6">Klicken Sie hier, um Text einzugeben.</td> </tr> <tr> <td></td> <td>with</td> <td>SWS / with totally</td> <td>contact hours</td> <td><input type="checkbox"/> presence time</td> <td><input type="checkbox"/> working hours</td> </tr> </table>	<input checked="" type="checkbox"/>	lecture(s) with	0,5	SWS/ contact hours	7	hours of presence time	<input checked="" type="checkbox"/> 1	seminar(s) with	1,5	SWS/ contact hours	21	hours of presence time	<input type="checkbox"/>	exercise(s) with		SWS/ contact hours		hours of presence time	<input type="checkbox"/>	internship(s) with		sum of working hours			<input type="checkbox"/>	seminar(s) with		SWS/ contact hours		total hours of presence time	<input checked="" type="checkbox"/> 1	laboratory/laboratories with	4	SWS/ contact hours	56	total hours of presence time	<input type="checkbox"/>	tutorial(s) with		SWS/ contact hours			<input type="checkbox"/>	excursion(s) with		SWS contact hours in total		working hours	<input type="checkbox"/>	other form of course (e.g. block seminar), namely this:					Klicken Sie hier, um Text einzugeben.							with	SWS / with totally	contact hours	<input type="checkbox"/> presence time	<input type="checkbox"/> working hours
<input checked="" type="checkbox"/>	lecture(s) with	0,5	SWS/ contact hours	7	hours of presence time																																																															
<input checked="" type="checkbox"/> 1	seminar(s) with	1,5	SWS/ contact hours	21	hours of presence time																																																															
<input type="checkbox"/>	exercise(s) with		SWS/ contact hours		hours of presence time																																																															
<input type="checkbox"/>	internship(s) with		sum of working hours																																																																	
<input type="checkbox"/>	seminar(s) with		SWS/ contact hours		total hours of presence time																																																															
<input checked="" type="checkbox"/> 1	laboratory/laboratories with	4	SWS/ contact hours	56	total hours of presence time																																																															
<input type="checkbox"/>	tutorial(s) with		SWS/ contact hours																																																																	
<input type="checkbox"/>	excursion(s) with		SWS contact hours in total		working hours																																																															
<input type="checkbox"/>	other form of course (e.g. block seminar), namely this:																																																																			
Klicken Sie hier, um Text einzugeben.																																																																				
	with	SWS / with totally	contact hours	<input type="checkbox"/> presence time	<input type="checkbox"/> working hours																																																															

		<p>= sum of presence time and working hours:</p> <p>84</p>
	<p>calculation of student workload</p> <p><i>(part b: preparation time and follow-up work/self-study)</i></p>	<p><b>b) working hours for preparation/follow-up work of the course(s) and/or self-study</b></p> <p>= sum of working hours:</p> <p>26</p>
	<p>calculation of student workload</p> <p><i>(part c: exam preparation etc.)</i></p>	<p><b>c) exam preparation (incl. examination)</b></p> <p>= sum of working hours:</p> <p>70</p>
	<p>calculation of student workload</p> <p><i>(total amount of hours including a) - c))</i></p>	<p><b>Total amount of the presence time and working hours a) to c):</b></p> <p>180</p>
1m	<p>description of possible optional courses in the module</p>	<p><u>Can a student choose between different courses within the module?</u></p> <p>NO</p> <p><u>Short description of selection option</u></p> <p>Klicken Sie hier, um Text einzugeben.</p>
1n	<p>language(s) of instruction</p>	<p><input type="checkbox"/> German      <input checked="" type="checkbox"/> English      <input type="checkbox"/> Spanish      <input type="checkbox"/> French</p> <p><input type="checkbox"/> Other, namely this:</p> <p>Klicken Sie hier, um Text einzugeben.</p>
1o	<p>frequency</p>	<p><i>(regular cycle module is offered) e.g.: winter semester, yearly or summer semester, yearly or each semester</i></p> <p>summer semester yearly</p> <p>Klicken Sie hier, um Text einzugeben.</p>
1p	<p>duration</p>	<p>one semester module</p> <p>Klicken Sie hier, um Text einzugeben.</p>
1q	<p>Literature <i>(optional)</i></p>	<p>Klicken Sie hier, um Text einzugeben.</p>
1r	<p>more information on the module <i>(optional)</i></p>	<p>Course instructor: Dr. Gisela Lannig-Bock, limited to 5 students, priority is given to BMB students</p>

2 INFORMATION ON THE MODULE EXAMINATION (see also AT Art. 5 section 8)																	
2a	type of examination	<input checked="" type="checkbox"/> module exam; i.e. exam with only one component (MP) <input type="checkbox"/> combination exam, i.e. exam with several components (administered by instructors) (KP) <input type="checkbox"/> partial exam; i.e. exam with several components (administered by registrar) (TP)															
2b	exam components or prerequisites ( <i>type, number</i> )	<p><i>PL = graded component of the examination</i>  <i>SL = ungraded component of the examination, coursework</i>  <i>PVL = prerequisite of the examination (see AT Art. 5 Section 10)</i></p> <p><input checked="" type="checkbox"/> PL   1      <input type="checkbox"/> SL        <input type="checkbox"/> PVL   justification</p> <p>If necessary, further explanations:</p> <p>Portfolio, composed of oral presentation (seminar talk, 40%) and presentation of a scientific poster (60%)</p> <p>Seminar talk: each student will give an oral presentation of a scientific publication. A list of scientific publications will be handed out at the beginning of the course.</p> <p>Presentation of a scientific poster: the students will prepare and present a scientific poster of the data set that they elaborated within the course.</p>															
2c	Give this information for combination examinations only: Weights (in percentage) of component grades	<p>PL 1:</p> <p>PL 2:</p> <p>PL 3: <a href="#">Klicken Sie hier, um Text einzugeben.</a></p> <p>PL 4: <a href="#">Klicken Sie hier, um Text einzugeben.</a></p> <p>If necessary, further comments:</p>															
2d	form of examination (see AT BPO/AT MPO Art. 8, 9 and 10)	<table border="0"> <tr> <td><input type="checkbox"/> Assignment</td> <td><input type="checkbox"/> Oral examination (single)</td> <td><input type="checkbox"/> Presentation, oral</td> </tr> <tr> <td><input type="checkbox"/> Written examination</td> <td><input type="checkbox"/> Group examination, oral</td> <td><input type="checkbox"/> Presentation and written assignment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Portfolio</td> <td><input type="checkbox"/> Project report</td> <td><input type="checkbox"/> Bachelor Thesis</td> </tr> <tr> <td><input type="checkbox"/> Internship report</td> <td><input type="checkbox"/> Colloquium</td> <td><input type="checkbox"/> Master Thesis</td> </tr> <tr> <td colspan="3"><input type="checkbox"/> Other (concrete definition is given in the examination regulations):</td> </tr> </table> <p><a href="#">Klicken Sie hier, um Text einzugeben.</a></p>	<input type="checkbox"/> Assignment	<input type="checkbox"/> Oral examination (single)	<input type="checkbox"/> Presentation, oral	<input type="checkbox"/> Written examination	<input type="checkbox"/> Group examination, oral	<input type="checkbox"/> Presentation and written assignment	<input checked="" type="checkbox"/> Portfolio	<input type="checkbox"/> Project report	<input type="checkbox"/> Bachelor Thesis	<input type="checkbox"/> Internship report	<input type="checkbox"/> Colloquium	<input type="checkbox"/> Master Thesis	<input type="checkbox"/> Other (concrete definition is given in the examination regulations):		
<input type="checkbox"/> Assignment	<input type="checkbox"/> Oral examination (single)	<input type="checkbox"/> Presentation, oral															
<input type="checkbox"/> Written examination	<input type="checkbox"/> Group examination, oral	<input type="checkbox"/> Presentation and written assignment															
<input checked="" type="checkbox"/> Portfolio	<input type="checkbox"/> Project report	<input type="checkbox"/> Bachelor Thesis															
<input type="checkbox"/> Internship report	<input type="checkbox"/> Colloquium	<input type="checkbox"/> Master Thesis															
<input type="checkbox"/> Other (concrete definition is given in the examination regulations):																	
2e	language(s) of instruction	<p><input type="checkbox"/> German      <input checked="" type="checkbox"/> English      <input type="checkbox"/> Spanish      <input type="checkbox"/> French</p> <p><input type="checkbox"/> Other, namely this:</p> <p><a href="#">Klicken Sie hier, um Text einzugeben.</a></p>															