

## CALCULUS II

<b>Code du cours</b> <b>Course Code</b>			<b>Titre du cours</b> <b>Course title</b>					
BAC.EAINA.OTMTH .1002			CALCULUS II					
<b>Crédits</b> <b>Credits</b>		<b>Période d'enseignement</b> <b>Teaching period</b>					<b>Année Académique</b> <b>Academic Year</b>	
6		fall, spring					2022/2023	
<b>Charge de travail</b> <b>Student workload</b>	<b>Synchrone /</b> <b>Synchronous</b>	<b>Asynchrone /</b> <b>Asynchronous</b>	<b>Travail en</b> <b>équipe</b> <b>Team work</b>	<b>Activités</b> <b>pédagogiques</b> <b>/ Pedagogical</b> <b>activities</b>	<b>Travail</b> <b>personnel</b> <b>Personal</b> <b>work</b>	<b>Coaching</b>	<b>Evaluation</b>	<b>Charge totale de travail</b> <b>Total workload</b>
	52,5	0	0	0	150	0	6	208,5
<b>Programme</b> <b>Program</b>			Global BBA					
<b>Discipline</b> <b>Discipline</b>								
<b>Module</b>			-					
<b>Type de cours</b> <b>Course type</b>			core					
<b>Campus</b>			Sophia					
<b>Campus partenaire</b>								
<b>Course open to</b> <b>students in exchange</b>								
<b>Langue</b> <b>d'enseignement</b> <b>Teaching language</b>		Anglais / English						
<b>Responsable du</b> <b>cours</b> <b>Course leader</b>			GRASSELLI Yan					
<b>Pré-Requis</b> <b>Prerequisite</b>			Calculus I					
<b>Nom des</b> <b>intervenants par</b> <b>campus</b> <b>Instructor(s) names</b> <b>by campus</b>	Belo Horizonte							
	Lille							
	Paris							
	Raleigh							
	Sophia							
	Stellenbosch- Le Cap							
	Suzhou							
	Nanjing							

	Barcelone			
	Other			

<b>Descriptif du cours / Course description</b>	<p>This course is the second math course taken by all engineering and science majors. Geometric and Physics applications of the definite integral links this course to its predecessors MTH 1001, followed by the same geometric applications in polar coordinates or for parametric equations, New techniques of integration and an introduction to differential equations complete the topics of integral Calculus, Other topics like the infinite series, power series and conic sections cover the last part of the course.</p>
<b>Thèmes / Topics</b>	<p>Techniques of integration  Numerical integration, Simpson's rule  Improper integrals  Modeling with differential equations  Applications of the definite integral in geometry and physics  Parametric equations  Hyperbolic functions  Polar coordinates system  Infinite sequences  Absolute and conditional convergence of infinite series  Power, Taylor and Maclaurin series  Conic sections  Rotation of axes  Matrices; Eigenvalues, Eigenvectors, Diagonalizable matrices</p>
<b>Résultats d'apprentissage / Intended Learning Outcomes and Skills</b>	<p><b>A l'issue de la formation, vous serez capable de / As a result of this module, you will be able to:</b></p> <p><b>Connaissances / Knowledge and Understanding (subject specific)</b></p> <p><b>Aptitudes cognitives / Cognitive skills</b></p> <p><b>Attitudes / Key transferable skills</b></p> <p><b>Ethical and social understanding</b></p>
<b>Contribution aux objectifs pédagogiques du programme / Contribution to learning objectives</b>	<p>Indiquer les learning objectives auxquels contribue le cours (en se basant sur le curriculum mapping du programme) / Indicate which learning objectives the course contributes to (based on the program curriculum mapping)</p>
<b>Contribution aux objectifs pédagogiques du programme / Contribution to learning objectives</b>	<p>Cours soumis à évaluation dans le cadre de l'Assurance of Learning pour l'année en cours ? Non / No</p>
	<p><b>Evaluation finale (DS) 40%</b></p>

<b>Evaluation des étudiants</b> <b>Student Assessment</b>	<b>Final examination</b>	
	(Précisez la nature pour l'évaluation finale / Explain type for final examination)	
	Cliquez ici pour entrer du texte.	
	QCM - Quiz:	
	Epreuve sur table - Supervised exam:	
	Présentation orale - Presentation:	
	Rapport écrit/Dissertation - Report / Dissertation:	
Participation - Class participation:		
<b>Autre, précisez / Other, precise:</b>		
<b>Contrôle continu</b>		
<b>Continuous Assessment</b>		
60%		
préciser nature / Explain type		
Cliquez ici pour entrer du texte.		
QCM - Quiz:		
Epreuve sur table - Supervised exam:		
Présentation orale - Presentation:		
Rapport écrit/Dissertation - Report / Dissertation:		
Participation - Class participation:		
<b>Autre, précisez / Other, precise:</b>		
Nb midterms : 0		
<b>Méthodes d'enseignement</b> <b>Teaching Methods</b>	<b>Format de cours / Course format</b>	
	Cours magistral / Lecture - TD / Tutorials	
	<b>Autre, précisez / Other, precise:</b>	
	<b>Activités d'apprentissage / Learning activities</b>	
Devoirs / Assignments		
<b>Plan de cours</b> <b>Course Plan</b>	Area between two curves, Volumes by slicing, disks and washers,	
	Volume by cylindrical shells; length of a plane curve, area of surface of revolution, average value	
	Work, fluid, pressure and force	
	Hyperbolic functions, hanging cables, an overview of integration methods	
	Integration by parts	
	Trigonometric integrals and trigonometric substitution	
	Integrating rational functions by partial fractions	

Integrating rational functions by partial fractions

Numerical integration and Improper integrals

Midterm n°1

First order differential equations

Modeling with first order differential equations and second order homogeneous differential equations

Sequences and monotone sequences

Infinites series, convergence test, comparison, ratio, roots test

Alternating series, conditional convergence

Maclaurin and Taylor series, convergence of power series, differentiating and integrating power series

Polar coordinates, Tangent lines, arc lenght for parametric and polar curves, area in polar coordinates

Midterm n°2

Rotation of axes, conic sections in polar coordinates

Rotation of axes, conic sections in polar coordinates

Topics

Conics sections

Diagonalizable matrix

	Diagonalisable matrix  Midterm n°3  Diagonal matrix
<b>Référence Académique / Academic reference</b>	
<b>Site(s) web / Web site(s)</b>	
<b>Licence(s) informatique(s)/ Computer licenses</b>	

	Modalités de délivrance du cours (par campus si différent) Course delivery modes (per campus if different)					
<b>Nombre CM Amphi / Number of Lectures</b>	<b>Durée CM Amphi (en heures) / Lecture duration (in hours)</b>	<b>Nombre TD / Number of Tutorial classes</b>	<b>Durée TD (en heures) / Tutorial class duration (in hours)</b>	<b>Asynchrone / Asynchronous</b>	<b>Autres (Distance learning, etc...) (en heures) / Other (in hours)</b>	<b>Préciser les spécificités de programmation (TD journée, cadencement spécifique des séances) / Specify if full-day tutorial class, different schedules</b>
Campus Sophia						
0	0	13	4,5	0	0	