

4.0 crédits	22.5 h + 15.0 h	1q
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Enseignants:	Dos Santos Santana Forte Vaz Pedro ;
Langue d'enseignement:	Français
Lieu du cours	Louvain-la-Neuve
Ressources en ligne:	<p>&amp;amp;lt;!--{cke_protected}{C}%3C!%2D%2D%0A%20%2F**%20Font%20Definitions%20*%2F%0A%40font-face%0A%09%7Bfont-family%3A%22Cambria%20Math%22%3B%0A%09panose-1%3A2%204%205%203%205%204%206%203%202%204%3B%0A%09mso-font-charset%3A0%3B%0A%09mso-generic-font-family%3Aauto%3B%0A%09mso-font-pitch%3Avariable%3B%0A%09mso-font-signature%3A3%200%200%200%201%200%3B%7D%0A%40font-face%0A%09%7Bfont-family%3A%22%20E3%83%92%20E3%83%A9%20E3%82%AE%20E3%83%8E%20E8%A7%92%20E3%82%B4%20Pro%20W3%22%3B%0A%09mso-font-charset%3A0%3B%0A%09mso-generic-font-family%3Aroman%3B%0A%09mso-font-pitch%3Aauto%3B%0A%09mso-font-signature%3A0%200%200%200%200%200%3B%7D%0A%20%2F*%20Style%20Definitions%20*%2F%0A%09mso-normal%2C%20li.MsoNormal%2C%20div.MsoNormal%0A%09%7Bmso-style-unhide%3A%3B%0A%09mso-style-qformat%3Ayes%3B%0A%09mso-style-parent%3A%22%22%3B%0A%09margin%3A0cm%3B%0A%09margin-bottom%3A.0001pt%3B%0A%09mso-pagination%3Awidow-orphan%3B%0A%09font-size%3A12.0pt%3B%0A%09font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-fareast-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-ansi-language%3AEN-US%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A%09mso-style-unhide%3A%3B%0A%09mso-style-parent%3A%22%22%3B%0A%09margin%3A0cm%3B%0A%09margin-bottom%3A.0001pt%3B%0A%09mso-pagination%3Awidow-orphan%3B%0A%09font-size%3A12.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%0A%09font-family%3AHelvetica%3B%0A%09mso-fareast-font-family%3A%22%20E3%83%92%20E3%83%A9%20E3%82%AE%20E3%83%8E%20E8%A7%92%20E3%82%B4%20Pro%20W3%22%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09color%3Ablack%3B%0A%09mso-ansi-language%3AFR%3B%7D%0A.MsoChpDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09mso-default-props%3Ayes%3B%0A%09font-size%3A10.0pt%3B%0A%09mso-ansi-font-size%3A10.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%7D%0A%40page%20WordSection1%0A%09%7Bsize%3A612.0pt%20792.0pt%3B%0A%09margin%3A70.85pt%2070.85pt%2070.85pt%2070.85pt%3B%0A%09mso-header-margin%3A36.0pt%3B%0A%09mso-footer-margin%3A36.0pt%3B%0A%09mso-paper-source%3A0%3B%7D%0Adiv.WordSection1%0A%09%7Bpage%3AWordSection1%3B%7D%0A%2D%2D%3E--&amp;amp;gt;</p> <p>Page web du cours dans moodle</p>

<p>Préalables :</p>	<p>& mp; amp; amp; amp; !; !- {cke_protected} {C} %3C !%2D %2D %0A %20 %2F *%20 Font %20 Definitions %20 *%2F %0A %40 font-face %0A %09 %7B font-family %3A %22 Cambria %20 Math %22 %3B %0A %09 panose-1 %3A 2%204 %205 %203 %205 %204 %206 %203 %202 %204 %3B %0A %09 mso-font-charset %3A 0%3B %0A %09 mso-generic-font-family %3A auto %3B %0A %09 mso-font-pitch %3A variable %3B %0A %09 mso-font-signature %3A 3%200 %200 %200 %201 %200 %3B %7D %0A %40 font-face %0A %09 %7B font-family %3A %22 E3 %83 %92 %E3 %83 %A9 %E3 %82 %AE %E3 %83 %8E %E8 %A7 %92 %E3 %82 %B4 %20 Pro %20 W3 %22 %3B %0A %09 mso-font-charset %3A 0%3B %0A %09 mso-generic-font-family %3A roman %3B %0A %09 mso-font-pitch %3A auto %3B %0A %09 mso-font-signature %3A 0%200 %200 %200 %200 %200 %3B %7D %0A %20 %2F *%20 Style %20 Definitions %20 *%2F %0A p. MsoNormal %2C %20 li. MsoNormal %2C %20 div. MsoNormal %0A %09 %7B mso-style-unhide %3A no %3B %0A %09 mso-style-qformat %3A yes %3B %0A %09 mso-style-parent %3A %22 %22 %3B %0A %09 margin %3A 0cm %3B %0A %09 margin-bottom %3A 0.0001pt %3B %0A %09 mso-paginate %3A widow-orphan %3B %0A %09 font-size %3A 12.0pt %3B %0A %09 font-family %3A %22 Times %20 New %20 Roman %22 %3B %0A %09 mso-fareast-font-family %3A %22 Times %20 New %20 Roman %22 %3B %0A %09 mso-bidi-font-family %3A %22 Times %20 New %20 Roman %22 %3B %0A %09 mso-ansi-language %3A EN-US %3B %0A %09 mso-fareast-language %3A EN-US %3B %7D %0A p. Corps %2C %20 li. Corps %2C %20 div. Corps %0A %09 %7B mso-style-name %3A Corps %3B %0A %09 mso-style-unhide %3A no %3B %0A %09 mso-style-parent %3A %22 %22 %3B %0A %09 margin %3A 0cm %3B %0A %09 margin-bottom %3A 0.0001pt %3B %0A %09 mso-paginate %3A widow-orphan %3B %0A %09 font-size %3A 12.0pt %3B %0A %09 mso-bidi-font-size %3A 10.0pt %3B %0A %09 font-family %3A Helvetica %3B %0A %09 mso-fareast-font-family %3A %22 E3 %83 %92 %E3 %83 %A9 %E3 %82 %AE %E3 %83 %8E %E8 %A7 %92 %E3 %82 %B4 %20 Pro %20 W3 %22 %3B %0A %09 mso-bidi-font-family %3A %22 Times %20 New %20 Roman %22 %3B %0A %09 color %3A black %3B %0A %09 mso-ansi-language %3A FR %3B %7D %0A p. MsoChpDefault %0A %09 %7B mso-style-type %3A export-only %3B %0A %09 mso-default-props %3A yes %3B %0A %09 font-size %3A 10.0pt %3B %0A %09 mso-ansi-font-size %3A 10.0pt %3B %0A %09 mso-bidi-font-size %3A 10.0pt %3B %7D %0A %40 page %20 WordSection1 %0A %09 %7B size %3A 612.0pt %3B %0A %09 margin %3A 70.85pt %20 70.85pt %20 70.85pt %3B %0A %09 mso-header-margin %3A 36.0pt %3B %0A %09 mso-footer-margin %3A 36.0pt %3B %0A %09 mso-paper-source %3A 0%3B %7D %0A div. WordSection1 %0A %09 %7B page %3A WordSection1 %3B %7D %0A %2D %2D %3E --& mp; amp; amp; gt;</p> <p>& t; !- {cke_protected} {C} %3C !%2D %2D %0A %20 %2F *%20 Font %20 Definitions %20 *%2F %0A %40 font-face %0A %09 %7B font-family %3A %22 EF %BC %AD %EF %BC %B3 %20 %E6 %98 %8E %E6 %9C %9D %22 %3B %0A %09 panose-1 %3A 0%200 %200 %200 %200 %200 %200 %200 %200 %200 %200 %3B %0A %09 mso-font-charset %3A 128 %3B %0A %09 mso-generic-font-family %3A roman %3B %0A %09 mso-font-format %3A other %3B %0A %09 mso-font-pitch %3A fixed %3B %0A %09 mso-font-signature %3A 1%20134676480 %2016 %200 %20131072 %200 %3B %7D %0A %40 font-face %0A %09 %7B font-family %3A %22 Cambria %20 Math %22 %3B %0A %09 panose-1 %3A 2%204 %205 %203 %205 %204 %206 %203 %202 %204 %3B %0A %09 mso-font-charset %3A 1%3B %0A %09 mso-generic-font-family %3A roman %3B %0A %09 mso-font-format %3A other %3B %0A %09 mso-font-pitch %3A variable %3B %0A %09 mso-font-signature %3A 0%200 %200 %200 %200 %200 %3B %7D %0A %40 font-face %0A %09 %7B font-family %3A Calibri %3B %0A %09 panose-1 %3A 2%2015 %205 %202 %202 %202 %204 %203 %202 %204 %3B %0A %09 mso-font-charset %3A 0%3B %0A %09 mso-generic-font-family %3A auto %3B %0A %09 mso-font-pitch %3A variable %3B %0A %09 mso-font-signature %3A 3%200 %200 %200 %201 %200 %3B %7D %0A %20 %2F *%20 Style %20 Definitions %20 *%2F %0A p. MsoNormal %2C %20 li. MsoNormal %2C %20 div. MsoNormal %0A %09 %7B mso-style-unhide %3A no %3B %0A %09 mso-style-qformat %3A yes %3B %0A %09 mso-style-parent %3A %22 %22 %3B %0A %09 margin-top %3A 0cm %3B %0A %09 margin-right %3A 0cm %3B %0A %09 margin-bottom %3A 10.0pt %3B %0A %09 margin-left %3A 0cm %3B %0A %09 line-height %3A 115 %25 %3B %0A %09 mso-paginate %3A widow-orphan %3B %0A %09 mso-hyphenate %3A none %3B %0A %09 font-size %3A 11.0pt %3B %0A %09 font-family %3A Calibri %3B %0A %09 mso-fareast-font-family %3A %22 EF %BC %AD %EF %BC %B3 %20 %E6 %98 %8E %E6 %9C %9D %22 %3B %0A %09 mso-fareast-theme-font %3A minor-fareast %3B %0A %09 mso-bidi-font-family %3A %22 Times %20 New %20 Roman %22 %3B %0A %09 mso-bidi-theme-font %3A minor-bidi %3B %0A %09 color %3A %2300000A %3B %0A %09 mso-ansi-language %3A FR %3B %0A %09 mso-fareast-language %3A EN-US %3B %7D %0A p. TableContents %2C %20 li. TableContents %2C %20 div. TableContents %0A %09 %7B mso-style-name %3A %22 Table %20 Contents %22 %3B %0A %09 mso-style-unhide %3A no %3B %0A %09 margin-top %3A 0cm %3B %0A %09 margin-right %3A 0cm %3B %0A %09 margin-bottom %3A 10.0pt %3B %0A %09 margin-left %3A 0cm %3B %0A %09 line-height %3A 115 %25 %3B %0A %09 mso-paginate %3A widow-orphan %3B %0A %09 mso-hyphenate %3A none %3B %0A %09 font-size %3A 11.0pt %3B %0A %09 font-family %3A Calibri %3B %0A %09 mso-fareast-font-family %3A %22 EF %BC %AD %EF %BC %B3 %20 %E6 %98 %8E %E6 %9C %9D %22 %3B %0A %09 mso-fareast-theme-font %3A minor-fareast %3B %0A %09 mso-bidi-font-family %3A %22 Times %20 New %20 Roman %22 %3B %0A %09 mso-bidi-theme-font %3A minor-bidi %3B %0A %09 color %3A %2300000A %3B %0A %09 mso-ansi-language %3A FR %3B %0A %09 mso-fareast-language %3A EN-US %3B %7D %0A p. MsoChpDefault %0A %09 %7B mso-style-type %3A export-only %3B %0A %09 mso-default-props %3A yes %3B %0A %09 font-size %3A 10.0pt %3B %0A %09 mso-ansi-font-size %3A 10.0pt %3B %0A %09 mso-bidi-font-size %3A 11.0pt %3B %0A %09 font-family %3A Calibri %3B %0A %09 mso-ascii-font-family %3A Calibri %3B %0A %09 mso-ascii-theme-font %3A minor-latin %3B %0A %09 mso-fareast-font-family %3A Calibri %3B %0A %09 mso-fareast-theme-font %3A minor-latin %3B %0A %09 mso-hansi-font-family %3A Calibri %3B %0A %09 mso-hansi-theme-font %3A minor-latin %3B %0A %09 mso-bidi-font-family %3A %22 Times %20 New %20 Roman %22 %3B %0A %09 mso-bidi-theme-font %3A minor-bidi %3B %0A %09 mso-fareast-language %3A EN-US %3B %7D %0A p. MsoPapDefault %0A %09 %7B mso-style-type %3A export-only %3B %0A %09 line-height %3A 107 %25 %3B %7D %0A %40 page %20 WordSection1 %0A %09 %7B size %3A 612.0pt %20 792.0pt %3B %0A %09 margin %3A 70.85pt %20 70.85pt %20 70.85pt %3B %0A %09 mso-header-margin %3A 36.0pt %3B %0A %09 mso-footer-margin %3A 36.0pt %3B %0A %09 mso-paper-source %3A 0%3B %7D %0A div. WordSection1 %0A %09 %7B page %3A WordSection1 %1 %3B %7D %0A %2D %2D %3E --& t;</p> <p>Cours LMAT1121 Analyse mathématique 1, ou cours équivalent, Maîtrise de la langue française.</p>
<p>Thèmes abordés :</p>	<p>& mp; amp; amp; amp; !; !- {cke_protected} {C} %3C !%2D %2D %0A %20 %2F *%20 Font %20 Definitions %20 *%2F %0A %40 font-face %0A %09 %7B font-family %3A %22 Cambria %20 Math %22 %3B %0A %09 panose-1 %3A 2%204 %205 %203 %205 %204 %206 %203 %202 %204 %3B %0A %09 mso-font-charset %3A 0%3B %0A %09 mso-generic-font-family %3A auto %3B %0A %09 mso-font-pitch %3A variable %3B %0A %09 mso-font-signature %3A 3%200 %200 %200 %201 %200 %3B %7D %0A %40 font-face %0A %09 %7B font-family %3A %22 E3 %83 %92 %E3 %83 %A9 %E3 %82 %AE %E3 %83 %8E %E8 %A7 %92 %E3 %82 %B4 %20 Pro %20 W3 %22 %3B %0A %09 mso-font-charset %3A 0%3B %0A %09 mso-generic-font-family %3A roman %3B %0A %09 mso-font-pitch %3A auto %3B %0A %09 mso-font-signature %3A 0%200 %200 %200 %200 %200 %3B %7D %0A %20 %2F *%20 Style %20 Definitions %20 *%2F %0A p. MsoNormal %2C %20 li. MsoNormal %2C %20 div. MsoNormal %0A %09 %7B mso-style-unhide %3A no %3B %0A %09 mso-style-qformat %3A yes %3B %0A %09 mso-style-parent %3A %22 %22 %3B %0A %09 margin %3A 0cm %3B %0A %09 margin-bottom %3A 0.0001pt %3B %0A</p>

	<p>%09mso-pagination%3Awidow-orphan%3B%0A%09font-size%3A12.0pt%3B%0A%09font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-foreast-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-ansi-language%3AEN-US%3B%0A%09mso-foreast-language%3AEN-US%3B%7D%0A%09mso-style-unhide%3A%22%22%3B%0A%09margin%3A0cm%3B%0A%09margin-bottom%3A0.0001pt%3B%0A%09mso-pagination%3Awidow-orphan%3B%0A%09font-size%3A12.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%0A%09font-family%3AHelvetica%3B%0A%09mso-foreast-font-family%3A%22Times%20New%20Roman%22%3B%0A%09color%3Ablack%3B%0A%09mso-ansi-language%3AFR%3B%7D%0A.MsoChpDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09mso-default-props%3Ayes%3B%0A%09font-size%3A10.0pt%3B%0A%09mso-ansi-font-size%3A10.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%7D%0A%40page%20WordSection1%0A%09%7Bsize%3A612.0pt%20792.0pt%3B%0A%09margin%3A70.85pt%2070.85pt%2070.85pt%2070.85pt%3B%0A%09mso-header-margin%3A36.0pt%3B%0A%09mso-footer-margin%3A36.0pt%3B%0A%09mso-paper-source%3A0%3B%7D%0Adiv.WordSection1%0A%09%7Bpage%3AWordSection1%3B%7D%0A%2D%2D%3E--&mp;amp;amp;gt;</p> <p>Espaces métriques, espaces topologiques, structures topologiques, espaces de Hausdorff, compacité, connexité, la langage des voisinages.</p>
<p>Acquis d'apprentissage</p>	<p>Contribution du cours aux acquis d'apprentissage du programme de bachelier en mathématique. A la fin de cette activité, l'étudiant aura progressé dans sa capacité à :</p> <ul style="list-style-type: none"> - Connaître et comprendre un socle fondamental des mathématiques. Il aura notamment développé sa capacité à : <ul style="list-style-type: none"> -- Choisir et utiliser des méthodes et des outils fondamentaux de topologie pour résoudre des problèmes de mathématique, en algèbre, analyse ou géométrie. -- Comprendre les fondements de la théorie, savoir les expliquer et les motiver par des exemples. - Parvenir à concrétiser une approche intuitive en une formalisation plus générale, rigoureuse et exacte. - Faire preuve d'abstraction et esprit critique. Il aura notamment développé sa capacité à : <ul style="list-style-type: none"> -- Combiner intuition et vision géométrique et formalisation. -- Reconnaître les arguments clef et la structure d'une démonstration. -- Construire un raisonnement de façon autonome. -- Apprécier la rigueur d'un raisonnement mathématique et en déceler les failles éventuelles. <p>Acquis d'apprentissage spécifiques au cours. A la fin de cette activité, l'étudiant sera capable de :</p> <ul style="list-style-type: none"> - Utiliser les outils de base de la topologie générale dans les utilisations importantes en algèbre commutative, en géométrie et en analyse fonctionnelle. - Utiliser les théorèmes de base et comprendre leur portée et intérêt. - Exploiter les propriétés de la topologie pour décrire des espaces géométriques concrets ou des espaces plus abstraits. - Savoir utiliser les concepts de la topologie pour résoudre des problèmes précis. <p>La contribution de cette UE au développement et à la maîtrise des compétences et acquis du (des) programme(s) est accessible à la fin de cette fiche, dans la partie « Programmes/formations proposant cette unité d'enseignement (UE) ».</p> <p><i>La contribution de cette UE au développement et à la maîtrise des compétences et acquis du (des) programme(s) est accessible à la fin de cette fiche, dans la partie « Programmes/formations proposant cette unité d'enseignement (UE) ».</i></p>

Modes d'évaluation
des acquis des
étudiants :


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& mp; lt;!--{cke_protected}(C)%3C!%2D%2D%2D%2D%20%2F%*%20Font%20Definitions%20%*%2F%0A%40font-face%0A%09%7Bfont-family%3A%22EF%BC%AD%EF%BC%B3%20%2E6%98%8E%E6%9C%9D%22%3B%0A%09panose-1%3A0%200%200%200%200%200%200%200%200%200%3B%0A%09mso-font-charset%3A128%3B%0A%09mso-generic-font-family%3Aroman%3B%0A%09mso-font-format%3Aother%3B%0A%09mso-font-pitch%3Afixed%3B%0A%09mso-font-signature%3A1%20134676480%2016%200%20131072%200%3B%7D%0A%40font-face%0A%09%7Bfont-family%3A%22Cambria%20Math%22%3B%0A%09panose-1%3A2%204%205%203%205%204%206%203%202%204%3B%0A%09mso-font-charset%3A1%3B%0A%09mso-generic-font-family%3Aroman%3B%0A%09mso-font-format%3Aother%3B%0A%09mso-font-pitch%3Avariable%3B%0A%09mso-font-signature%3A0%200%200%200%200%200%3B%7D%0A%40font-face%0A%09%7Bfont-family%3ACalibri%3B%0A%09panose-1%3A2%2015%205%202%202%202%204%203%202%204%3B%0A%09mso-font-charset%3A0%3B%0A%09mso-generic-font-family%3Aauto%3B%0A%09mso-font-pitch%3Avariable%3B%0A%09mso-font-signature%3A3%200%200%200%201%200%3B%7D%0A%20%2F%*%20Style%20Definitions%20%*%2F%0A%09mso-normal%2C%20li.MsoNormal%2C%20div.MsoNormal%0A%09%7Bmso-style-unhide%3Ano%3B%0A%09mso-style-qformat%3Ayes%3B%0A%09mso-style-parent%3A%22%22%3B%0A%09margin-top%3A0cm%3B%0A%09margin-right%3A0cm%3B%0A%09margin-bottom%3A10.0pt%3B%0A%09margin-left%3A0cm%3B%0A%09line-height%3A115%25%3B%0A%09mso-pagination%3Awidow-orphan%3B%0A%09mso-hyphenate%3Anone%3B%0A%09font-size%3A11.0pt%3B%0A%09font-family%3ACalibri%3B%0A%09mso-fareast-font-family%3A%22EF%BC%AD%EF%BC%B3%20%2E6%98%8E%E6%9C%9D%22%3B%0A%09mso-fareast-theme-font%3Aminor-fareast%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-theme-font%3Aminor-bidi%3B%0A%09color%3Ablack%3B%0A%09mso-ansi-language%3AFR%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A%09mso-text-body%2C%20li.TextBody%2C%20div.TextBody%0A%09%7Bmso-style-name%3A%22Text%20Body%22%3B%0A%09mso-style-unhide%3Ano%3B%0A%09margin-top%3A0cm%3B%0A%09margin-right%3A0cm%3B%0A%09margin-bottom%3A7.0pt%3B%0A%09margin-left%3A0cm%3B%0A%09line-height%3A120%25%3B%0A%09mso-pagination%3Awidow-orphan%3B%0A%09mso-hyphenate%3Anone%3B%0A%09font-size%3A11.0pt%3B%0A%09font-family%3ACalibri%3B%0A%09mso-fareast-font-family%3A%22EF%BC%AD%EF%BC%B3%20%2E6%98%8E%E6%9C%9D%22%3B%0A%09mso-fareast-theme-font%3Aminor-fareast%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-theme-font%3Aminor-bidi%3B%0A%09color%3Ablack%3B%0A%09mso-ansi-language%3AFR%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A.MsoChpDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09mso-default-props%3Ayes%3B%0A%09font-size%3A10.0pt%3B%0A%09mso-ansi-font-size%3A10.0pt%3B%0A%09mso-bidi-font-size%3A11.0pt%3B%0A%09font-family%3ACalibri%3B%0A%09mso-ascii-font-family%3ACalibri%3B%0A%09mso-ascii-theme-font%3Aminor-latin%3B%0A%09mso-fareast-font-family%3ACalibri%3B%0A%09mso-fareast-theme-font%3Aminor-latin%3B%0A%09mso-hansi-font-family%3ACalibri%3B%0A%09mso-hansi-theme-font%3Aminor-latin%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-theme-font%3Aminor-bidi%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A.MsoPapDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09line-height%3A107%25%3B%7D%0A%40page%20WordSection1%0A%09%7Bsize%3A612.0pt%20792.0pt%3B%0A%09margin%3A70.85pt%2070.85pt%2070.85pt%2070.85pt%3B%0A%09mso-header-margin%3A36.0pt%3B%0A%09mso-footer-margin%3A36.0pt%3B%0A%09mso-paper-source%3A0%3B%7D%0Adiv.WordSection1%0A%09%7Bpage%3AWordSection1%3B%7D%0A%2D%2D%3E--& mp; gt;

L'évaluation se fait sur base d'un examen écrit comprenant trois parties de valeur égale : une partie vérification de l'acquis de la matière enseigné, une partie plus réflexion montrant que l'étudiant a pu prendre du recul sur la matière et se l'est en partie approprié, une troisième partie fait d'exercices du style fait pendant l'année.

<p>Méthodes d'enseignement :</p>	<p>& mp; amp; amp; amp; lt;!--{cke_protected}{C}%3C!%2D%2D%0A%20%2F*%20Font%20Definitions%20*%2F%0A%40font-face%0A%09%7Bfont-family%3A%22Cambria%20Math%22%3B%0A%09panose-1%3A2%204%205%203%205%204%206%203%202%204%3B%0A%09mso-font-charset%3A0%3B%0A%09mso-generic-font-family%3Aauto%3B%0A%09mso-font-pitch%3Avariable%3B%0A%09mso-font-signature%3A3%200%200%200%201%200%3B%7D%0A%40font-face%0A%09%7Bfont-family%3A%22E3%83%92%E3%83%A9%E3%82%AE%E3%83%8E%E8%A7%92%E3%82%B4%20Pro%20W3%22%3B%0A%09mso-font-charset%3A0%3B%0A%09mso-generic-font-family%3Aroman%3B%0A%09mso-font-pitch%3Aauto%3B%0A%09mso-font-signature%3A0%200%200%200%200%200%3B%7D%0A%20%2F*%20Style%20Definitions%20*%2F%0A%09mso-style-qformat%3Ayes%3B%0A%09mso-style-parent%3A%22%22%3B%0A%09margin%3A0cm%3B%0A%09margin-bottom%3A12pt%3B%0A%09mso-paginatation%3Awidow-orphan%3B%0A%09font-size%3A12.0pt%3B%0A%09font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-fareast-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-ansi-language%3AEN-US%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A%09mso-style-name%3A%22Times%20New%20Roman%22%3B%0A%09mso-style-unhide%3A%22%22%3B%0A%09margin%3A0cm%3B%0A%09margin-bottom%3A10pt%3B%0A%09mso-paginatation%3Awidow-orphan%3B%0A%09font-size%3A12.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%0A%09font-family%3AHelvetica%3B%0A%09mso-fareast-font-family%3A%22E3%83%92%E3%83%A9%E3%82%AE%E3%83%8E%E8%A7%92%E3%82%B4%20Pro%20W3%22%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09color%3Ablack%3B%0A%09mso-ansi-language%3AFR%3B%7D%0A.MsoChpDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09mso-default-props%3Ayes%3B%0A%09font-size%3A10.0pt%3B%0A%09mso-ansi-font-size%3A10.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%0A%09mso-paginatation%3Awidow-orphan%3B%0A%09font-size%3A12.0pt%3B%0A%09mso-ansi-language%3AFR%3B%7D%0A.MsoChpDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09mso-default-props%3Ayes%3B%0A%09font-size%3A10.0pt%3B%0A%09mso-ansi-font-size%3A10.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%0A%09mso-header-margin%3A36.0pt%3B%0A%09mso-footer-margin%3A36.0pt%3B%0A%09mso-paper-source%3A0%3B%7D%0Adiv.WordSection1%0A%09%7Bpage%3AWordSection1%3B%7D%0A%2D%2D%3E--& mp; amp; amp; amp; gt;</p> <p>& mp; amp; amp; amp; lt;!--{cke_protected}{C}%3C!%2D%2D%0A%20%2F*%20Font%20Definitions%20*%2F%0A%40font-face%0A%09%7Bfont-family%3A%22EF%BC%AD%EF%BC%B3%20%20E6%98%8E%E6%9C%9D%22%3B%0A%09panose-1%3A0%200%200%200%200%200%200%200%200%200%200%200%200%200%200%200%200%200%3B%0A%09mso-font-charset%3A128%3B%0A%09mso-generic-font-family%3Aroman%3B%0A%09mso-font-format%3Aother%3B%0A%09mso-font-pitch%3Afixed%3B%0A%09mso-font-signature%3A1%20134676480%2016%200%20131072%200%3B%7D%0A%40font-face%0A%09%7Bfont-family%3A%22EF%BC%AD%EF%BC%B3%20%20E6%98%8E%E6%9C%9D%22%3B%0A%09panose-1%3A0%200%200%200%200%200%200%200%200%200%200%200%200%200%200%200%200%200%3B%0A%09mso-font-charset%3A128%3B%0A%09mso-generic-font-family%3Aroman%3B%0A%09mso-font-format%3Aother%3B%0A%09mso-font-pitch%3Afixed%3B%0A%09mso-font-signature%3A1%20134676480%2016%200%20131072%200%3B%7D%0A%40font-face%0A%09%7Bfont-family%3ACalibri%3B%0A%09panose-1%3A2%2015%205%202%202%202%202%204%203%202%204%3B%0A%09mso-font-charset%3A0%3B%0A%09mso-generic-font-family%3Aauto%3B%0A%09mso-font-pitch%3Avariable%3B%0A%09mso-font-signature%3A3%200%200%200%201%200%3B%7D%0A%20%2F*%20Style%20Definitions%20*%2F%0A%09mso-style-qformat%3Ayes%3B%0A%09mso-style-parent%3A%22%22%3B%0A%09margin-top%3A0cm%3B%0A%09margin-right%3A0cm%3B%0A%09margin-bottom%3A10.0pt%3B%0A%09margin-left%3A0cm%3B%0A%09line-height%3A115%25%3B%0A%09mso-paginatation%3Awidow-orphan%3B%0A%09mso-hyphenate%3A%22%22%3B%0A%09font-size%3A11.0pt%3B%0A%09font-family%3ACalibri%3B%0A%09mso-fareast-font-family%3A%22EF%BC%AD%EF%BC%B3%20%20E6%98%8E%E6%9C%9D%22%3B%0A%09mso-fareast-theme-font%3Aminor-fareast%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-theme-font%3Aminor-bidi%3B%0A%09color%3A%2300000A%3B%0A%09mso-ansi-language%3AFR%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A%09mso-style-unhide%3A%22%22%3B%0A%09margin-top%3A0cm%3B%0A%09margin-right%3A0cm%3B%0A%09margin-bottom%3A7.0pt%3B%0A%09margin-left%3A0cm%3B%0A%09line-height%3A120%25%3B%0A%09mso-paginatation%3Awidow-orphan%3B%0A%09mso-hyphenate%3A%22%22%3B%0A%09font-size%3A11.0pt%3B%0A%09font-family%3ACalibri%3B%0A%09mso-fareast-font-family%3A%22EF%BC%AD%EF%BC%B3%20%20E6%98%8E%E6%9C%9D%22%3B%0A%09mso-fareast-theme-font%3Aminor-fareast%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-theme-font%3Aminor-bidi%3B%0A%09mso-ansi-language%3AFR%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A.MsoChpDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09mso-default-props%3Ayes%3B%0A%09font-size%3A10.0pt%3B%0A%09mso-ansi-font-size%3A10.0pt%3B%0A%09mso-bidi-font-size%3A11.0pt%3B%0A%09font-family%3ACalibri%3B%0A%09mso-ansi-font-family%3ACalibri%3B%0A%09mso-ansi-theme-font%3Aminor-latin%3B%0A%09mso-fareast-font-family%3ACalibri%3B%0A%09mso-fareast-theme-font%3Aminor-latin%3B%0A%09mso-hansi-font-family%3ACalibri%3B%0A%09mso-hansi-theme-font%3Aminor-latin%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-theme-font%3Aminor-bidi%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A.MsoPapDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09line-height%3A107%25%3B%7D%0A%40page%20WordSection1%0A%09%7Bsize%3A612.0pt%20792.0pt%3B%0A%09margin%3A70.85pt%2070.85pt%2070.85pt%3B%0A%09mso-header-margin%3A36.0pt%3B%0A%09mso-footer-margin%3A36.0pt%3B%0A%09mso-paper-source%3A0%3B%7D%0Adiv.WordSection1%0A%09%7Bpage%3AWordSection1%3B%7D%0A%2D%2D%3E--& mp; amp; amp; amp; gt;</p> <p>Les activités d'apprentissage sont constituées par des cours magistraux et de séances de travaux pratiques. Les cours magistraux visent à introduire les concepts fondamentaux, à les motiver en montrant des exemples et en établissant des résultats. Seuls les résultats dont la preuve n'est pas hyper technique sont démontrés au cours. Les résultats sont souvent présentés avec commentaires historiques et applications. Les séances de travaux pratiques visent à assimiler la théorie par des exercices de calcul et des exercices de réflexion. Le professeur et l'assistant en charges des travaux pratiques ont communiqué aux étudiants des heures de bureau pendant lesquels ils sont à leur disposition pour des explications complémentaires,</p>
<p>Contenu :</p>	<p>& mp; amp; amp; amp; lt;!--{cke_protected}{C}%3C!%2D%2D%0A%20%2F*%20Font%20Definitions%20*%2F%0A%40font-face%0A%09%7Bfont-family%3A%22EF%BC%AD%EF%BC%B3%20%20E6%98%8E%E6%9C%9D%22%3B%0A%09panose-1%3A0%200%200%200%200%200%200%200%200%200%200%200%200%200%200%200%200%200%3B%0A%09mso-font-charset%3A128%3B%0A%09mso-generic-font-family%3Aroman%3B%0A%09mso-font-format%3Aother%3B%0A%09mso-font-pitch%3Afixed%3B%0A%09mso-font-signature%3A1%20134676480%2016%200%20131072%200%3B%7D%0A%40font-face%0A%09%7Bfont-family%3A%22Cambria%20Math%22%3B%0A%09panose-1%3A2%204%205%203%205%204%206%203%202%204%3B%0A</p>

	<p>%09mso-font-charset%3A1%3B%0A%09mso-generic-font-family%3Aroman%3B%0A%09mso-font-format%3Aother%3B%0A%09mso-font-pitch%3Avariable%3B%0A%09mso-font-signature%3A0%200%200%200%200%200%3B%7D%0A%40font-face%0A%09%7Bfont-family%3ACalibri%3B%0A%09panose-1%3A2%2015%205%202%202%202%204%203%202%204%3B%0A%09mso-font-charset%3A0%3B%0A%09mso-generic-font-family%3Aauto%3B%0A%09mso-font-pitch%3Avariable%3B%0A%09mso-font-signature%3A3%200%200%200%201%200%3B%7D%0A%20%2F%20Style%20Definitions%20%2F%0A%09mso-normal%2C%20li.MsoNormal%2C%20div.MsoNormal%0A%09%7Bmso-style-unhide%3A%3B%0A%09mso-style-qformat%3Ayes%3B%0A%09mso-style-parent%3A%22%22%3B%0A%09margin-top%3A0cm%3B%0A%09margin-right%3A0cm%3B%0A%09margin-bottom%3A10.0pt%3B%0A%09margin-left%3A0cm%3B%0A%09line-height%3A115%25%3B%0A%09mso-pagination%3Awidow-orphan%3B%0A%09mso-hyphenate%3A%3B%0A%09font-size%3A11.0pt%3B%0A%09font-family%3ACalibri%3B%0A%09mso-fareast-font-family%3A%22%EF%BC%AD%EF%BC%B3%20%E6%98%8E%E6%9C%9D%22%3B%0A%09mso-fareast-theme-font%3Aminor-fareast%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-theme-font%3Aminor-bidi%3B%0A%09color%3A%230000A%3B%0A%09mso-ansi-language%3AFR%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A%09mso-fareast-language%3AEN-US%3B%7D%0A%09mso-style-name%3A%22Text%20Body%22%3B%0A%09mso-style-unhide%3A%3B%0A%09margin-top%3A0cm%3B%0A%09margin-right%3A0cm%3B%0A%09margin-bottom%3A7.0pt%3B%0A%09margin-left%3A0cm%3B%0A%09line-height%3A120%25%3B%0A%09mso-pagination%3Awidow-orphan%3B%0A%09mso-hyphenate%3A%3B%0A%09font-size%3A11.0pt%3B%0A%09font-family%3ACalibri%3B%0A%09mso-fareast-font-family%3A%22%EF%BC%AD%EF%BC%B3%20%E6%98%8E%E6%9C%9D%22%3B%0A%09mso-fareast-theme-font%3Aminor-fareast%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-theme-font%3Aminor-bidi%3B%0A%09mso-fareast-language%3AFR%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A.MsoChpDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09mso-default-props%3Ayes%3B%0A%09font-size%3A10.0pt%3B%0A%09mso-ansi-font-size%3A10.0pt%3B%0A%09mso-bidi-font-size%3A11.0pt%3B%0A%09font-family%3ACalibri%3B%0A%09mso-ascii-font-family%3ACalibri%3B%0A%09mso-ascii-theme-font%3Aminor-latin%3B%0A%09mso-fareast-font-family%3ACalibri%3B%0A%09mso-fareast-theme-font%3Aminor-latin%3B%0A%09mso-hansi-font-family%3ACalibri%3B%0A%09mso-hansi-theme-font%3Aminor-latin%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-theme-font%3Aminor-bidi%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A.MsoPapDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09line-height%3A107%25%3B%7D%0A%40page%20WordSection1%0A%09%7Bsize%3A612.0pt%20792.0pt%3B%0A%09margin%3A70.85pt%2070.85pt%2070.85pt%3B%0A%09mso-header-margin%3A36.0pt%3B%0A%09mso-footer-margin%3A36.0pt%3B%0A%09mso-paper-source%3A0%3B%7D%0Adiv.WordSection1%0A%09%7Bpage%3AWordSection1%3B%7D%0A%2D%2D%3E--& mp;gt;</p> <p>Cette activité consiste à introduire les concepts basiques de la topologie qui ont un rôle essentiel dans tout le cursus de bachelier et de master en sciences mathématiques et en sciences physiques</p> <p>Les contenus suivants sont abordés dans le cadre du cours.</p> <ol style="list-style-type: none"> 1. Définition et exemple d'espaces métriques : fonction continues, ensembles ouverts et ensembles fermés dans les espaces métriques. 2. Définition et exemple d'espaces topologiques : fonction continues, ensembles ouverts et ensembles fermés dans les espaces topologiques. Intérieur et fermeture. 3. Davantage sur les structures topologiques : homéomorphismes, sous-espaces topologiques, produit d'espaces topologiques et topologie quotient. 4. Séparabilité : espaces de Hausdorff. 5. Compacité : espaces compacts, produits d'espaces compacts, compacité dans les espaces métriques. 6. Connexité : espaces connexes et connexes par arcs. 7. La langage des voisinages : voisinages et base d'une topologie.
<p>Bibliographie :</p>	<p>& mp;mp;mp;mp;!--(cke_protected){C}%3C!%2D%2D%0A%20%2F%20Font%20Definitions%20%2F%0A%40font-face%0A%09%7Bfont-family%3A%22Cambria%22Math%22%3B%0A%09panose-1%3A2%204%205%203%205%204%206%203%202%204%3B%0A%09mso-font-charset%3A0%3B%0A%09mso-generic-font-family%3Aauto%3B%0A%09mso-font-pitch%3Avariable%3B%0A%09mso-font-signature%3A3%200%200%200%201%200%3B%7D%0A%40font-face%0A%09%7Bfont-family%3A%22E3%83%92%E3%83%A9%E3%82%AE%E3%83%8E%E8%A7%92%E3%82%B4%20Pro%20W3%22%3B%0A%09mso-font-charset%3A0%3B%0A%09mso-generic-font-family%3Aroman%3B%0A%09mso-font-pitch%3Aauto%3B%0A%09mso-font-signature%3A0%200%200%200%200%200%3B%7D%0A%20%2F%20Style%20Definitions%20%2F%0A%09mso-normal%2C%20li.MsoNormal%2C%20div.MsoNormal%0A%09%7Bmso-style-unhide%3A%3B%0A%09mso-style-qformat%3Ayes%3B%0A%09mso-style-parent%3A%22%22%3B%0A%09margin%3A0cm%3B%0A%09margin-bottom%3A.0001pt%3B%0A%09mso-pagination%3Awidow-orphan%3B%0A%09font-size%3A12.0pt%3B%0A%09font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-fareast-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09mso-ansi-language%3AEN-US%3B%0A%09mso-fareast-language%3AEN-US%3B%7D%0A%09mso-ansi-language%3AEN-US%3B%7D%0A%09mso-fareast-language%3AEN-US%3B%7D%0A%09mso-style-name%3ACorps%3B%0A%09mso-style-unhide%3A%3B%0A%09mso-style-parent%3A%22%22%3B%0A%09margin%3A0cm%3B%0A%09margin-bottom%3A.0001pt%3B%0A%09mso-pagination%3Awidow-orphan%3B%0A%09font-size%3A12.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%0A%09font-family%3AHelvetica%3B%0A%09mso-fareast-font-family%3A%22E3%83%92%E3%83%A9%E3%82%AE%E3%83%8E%E8%A7%92%E3%82%B4%20Pro%20W3%22%3B%0A%09mso-bidi-font-family%3A%22Times%20New%20Roman%22%3B%0A%09color%3Ablack%3B%0A%09mso-ansi-language%3AFR%3B%7D%0A.MsoChpDefault%0A%09%7Bmso-style-type%3Aexport-only%3B%0A%09mso-default-props%3Ayes%3B%0A%09font-size%3A10.0pt%3B%0A%09mso-ansi-font-size%3A10.0pt%3B%0A%09mso-bidi-font-size%3A10.0pt%3B%7D%0A%40page%20WordSection1%0A%09%7Bsize%3A612.0pt%20792.0pt%3B%0A%09margin%3A70.85pt%2070.85pt%2070.85pt%2070.85pt%3B%0A%09mso-header-margin%3A36.0pt%3B%0A%09mso-footer-margin%3A36.0pt%3B%0A%09mso-paper-source%3A0%3B%7D%0Adiv.WordSection1%0A%09%7Bpage%3AWordSection1%3B%7D%0A%2D%2D%3E--& mp;mp;mp;mp;gt;</p> <p>Syllabus distribué au cours</p>
<p>Faculté ou entité en charge:</p>	<p>MATH</p>

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Crédits	Prérequis	Acquis d'apprentissage
Mineure en mathématiques	LMATH100I	4	-	
Bachelier en sciences mathématiques	MATH1BA	4	-	