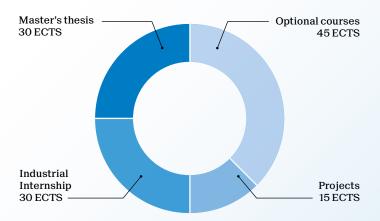


© 06.2016, Ecole polytechnique fédérale de Lausanne - Concept and design: monokini.ch with didier-oberson.ch

Master of Science in APPLIED MATHEMATICS

2-year program - 120 ECTS



Students must choose between the following two orientations:

Applied Mathematics

• at least 30 credits in list B

Statistics and Applied probabilities

• at least 30 credits in list C

Recommended minors:

- Management, Technology and Entrepreneurship
- Science, Technology and Area Studies

Optional courses A B C 45 Advanced regression B C 5 Algebraic curves and cryptography A B 5 Analyse fonctionnelle II A B 5 Analysis on groups A 5 Biostatistics B C 5 Calcul des variations A 5 Combinatorial optimization B C 5 Combinatorial optimization B C 5 Computational finance B 5 5 Computational linear algebra B 5 5 Computational linear algebra B 5 5 Convexity B 5 5 Differential geometry of framed curves A B 5 Elliptic partial differential equations A B 5 Géométrie hyperbolique et groupes discrets A B 5 Géométrie hyperbolique et groupes discrets A B 5		Orientations			Credits
Algebraic curves and cryptography A B 5 Analyse fonctionnelle II A B 5 Analysis on groups A 5 Biostatistics B C 5 Calcul des variations A 5 Combinatorial optimization B C 5 Commutative algebra A 5 Computational finance B 5 Computational linear algebra B 5 Convexity B 5 Differential geometry of framed curves A B 5 Elliptic partial differential equations A B 5 Géodel and recursivity A B 5 Harmonic analysis A B 5 Introduction a lageométrie riemannienne A B 5 Introduction to algebraic geometry A B 5 Lattice models A C 5 Martingales in financial mathematics B C 5	Optional courses	Α	В	С	45
Analyse fonctionnelle II A B S S Analysis on groups A S S Siostatistics B C S S Calcul des variations A S S Combinatorial optimization B C S S Commutative algebra A S S Computational finance B S S S S S S S S S S S S S S S S S S	Advanced regression		В	С	5
Analysis on groups Biostatistics Calcul des variations Combinatorial optimization Commutative algebra Computational finance Computational linear algebra Computational linear algebra Convexity B Convexity B Convexity B Computational linear algebra Convexity B	Algebraic curves and cryptography	Α	В		5
Biostatistics	Analyse fonctionnelle II	Α	В		5
Calcul des variations Combinatorial optimization Commutative algebra Computational finance Computational linear algebra Convexity Differential geometry of framed curves Elliptic partial differential equations Géométrie hyperbolique et groupes discrets Gödel and recursivity A B S Introduction à la géométrie riemannienne Introduction to algebraic geometry A Lattice models Martingales in financial mathematics Mathematical modelling of DNA Number theory in cryptography Numerical approximation of partial differential equations I Numerical methods for conservation laws Numerical methods for conservation laws Numerical methods for electromagnetics Packing and covering Parabolic and hyperbolic PDEs Robust and nonparametric statistics Set theory Statistical theory Statistical theory Statistical theory Statistical calcul stochastique Technical sp C 5 Statistique multivariée Théorie du calcul stochastique S Computational finance B C 5 C 5 C 5 C C C C C C C	Analysis on groups	Α			5
Combinatorial optimizationBC5Commutative algebraA5Computational financeB5Computational linear algebraB5ConvexityB5Differential geometry of framed curvesAB5Elliptic partial differential equationsAB5Géométrie hyperbolique et groupes discretsAB5Gödel and recursivityAB5Harmonic analysisAB5Introduction à la géométrie riemannienneAB5Introduction to algebraic geometryAC5Lattice modelsAC5Martingales in financial mathematicsBC5Mathematical modelling of behaviorB5Mathematical modelling of DNAB5Number theory in cryptographyAB5Numerical approximation of partial differential equations IB5Numerical methods for conservation lawsB5Numerical methods for electromagneticsC5Packing and coveringBC5Parabolic and hyperbolic PDEsABC5Probabilistic methodBC5Probabilistic methodBC5Probabilistic methodBC5Probabilistic methodBC5Robust and nonparametric statisticsBC5Set theoryAS <td< td=""><td>Biostatistics</td><td></td><td>В</td><td>С</td><td>5</td></td<>	Biostatistics		В	С	5
Commutative algebra Computational finance Computational linear algebra Computational linear algebra Convexity B Differential geometry of framed curves A B S Elliptic partial differential equations A B Géométrie hyperbolique et groupes discrets A Gödel and recursivity A Harmonic analysis Introduction à la géométrie riemannienne A Introduction to algebraic geometry A Lattice models A C S Martingales in financial mathematics B C S Mathematical modelling of behavior B Mathematical modelling of DNA B Number theory in cryptography Numerical approximation of partial differential equations I Numerical integration of stochastic differential equations IB Numerical methods for conservation laws Numerical methods for electromagnetics C B Packing and covering Parabolic and hyperbolic PDEs Probabilistic method	Calcul des variations	Α			5
Computational finance Computational linear algebra Convexity B Convexity Differential geometry of framed curves A B S Elliptic partial differential equations Géométrie hyperbolique et groupes discrets A B Gödel and recursivity A Harmonic analysis Introduction à la géométrie riemannienne Introduction to algebraic geometry A Lattice models Martingales in financial mathematics Mathematical modelling of behavior Mathematical modelling of DNA Number theory in cryptography Numerical approximation of partial differential equations I Numerical approximation of partial differential equations II Numerical methods for conservation laws Numerical methods for electromagnetics Packing and covering Parabolic and hyperbolic PDEs Probabilistic method Probabilistic met	Combinatorial optimization		В	С	5
Computational linear algebra Convexity Differential geometry of framed curves A B 5 Elliptic partial differential equations A B 5 Géométrie hyperbolique et groupes discrets A B 5 Gödel and recursivity A B 5 Introduction à la géométrie riemannienne A B 5 Introduction to algebraic geometry A B C 5 Martingales in financial mathematics B C 5 Mathematical modelling of behavior Mathematical modelling of DNA Number theory in cryptography Numerical approximation of partial differential equations I Numerical integration of stochastic differential equations I Numerical methods for conservation laws Numerical methods for electromagnetics Packing and covering Parabolic and hyperbolic PDEs Probabilistic method Probabilistic m	Commutative algebra	Α			5
Convexity Differential geometry of framed curves A B 5 Elliptic partial differential equations A B 5 Géométrie hyperbolique et groupes discrets Gödel and recursivity A B 5 Harmonic analysis Introduction à la géométrie riemannienne Introduction to algebraic geometry A C 5 Martingales in financial mathematics Mathematical modelling of behavior Mathematical modelling of DNA Number theory in cryptography Numerical approximation of partial differential equations I Numerical integration of stochastic differential equations II Numerical methods for conservation laws Numerical methods for electromagnetics Packing and covering Parabolic and hyperbolic PDEs Probabilistic method Probabilistic method R C 5 Set theory Statistical theory Statistical for genomics Statistique multivariée Théorie du calcul stochastique B C 5 Théorie du calcul stochastique	Computational finance		В		5
Differential geometry of framed curves Elliptic partial differential equations Géométrie hyperbolique et groupes discrets A B Gödel and recursivity Harmonic analysis Introduction à la géométrie riemannienne Introduction to algebraic geometry Lattice models Martingales in financial mathematics Mathematical modelling of behavior Mathematical modelling of DNA Number theory in cryptography Numerical approximation of partial differential equations I Numerical integration of stochastic differential equations II Packing and covering Parabolic and hyperbolic PDEs Robust and nonparametric statistics Set theory Statistical theory Statistical dual calcul stochastique B C 5 Statistique multivariée Théorie du calcul stochastique S B C 5 Gödel and recursivity A B C 5 Sedemétrie hyperbolique et groupes discrets A B C 5 Sedemétrie hyperbolique et groupes discretail equations A B C 5 Sedemétrie hyperbolique et goule and sedementics A B C 5 Sedemétrie hyperbolique et goule and sedementics A B C 5 Sedemétri	Computational linear algebra		В		5
Elliptic partial differential equations Géométrie hyperbolique et groupes discrets A Gödel and recursivity A Harmonic analysis Introduction à la géométrie riemannienne A Introduction to algebraic geometry A Lattice models A C Martingales in financial mathematics B Mathematical modelling of behavior B Mathematical modelling of DNA Number theory in cryptography A Numerical approximation of partial differential equations I Numerical integration of stochastic differential equations II Numerical methods for conservation laws Numerical methods for electromagnetics C Packing and covering Parabolic and hyperbolic PDEs A Robust and nonparametric statistics B C S Set theory A Statistical theory Statistics for genomics Statistique multivariée Théorie du calcul stochastique B C S Théorie du calcul stochastique B C S S C S S C S S C S S C S S C S S C S S C S S C S S C S S S C S S S C S S S S C S S S S S C S	Convexity		В		5
Géométrie hyperbolique et groupes discrets Gödel and recursivity A B Gödel and recursivity A B Harmonic analysis Introduction à la géométrie riemannienne A Introduction to algebraic geometry A Lattice models A C Martingales in financial mathematics B C Mathematical modelling of behavior B Mathematical modelling of DNA B Number theory in cryptography A B Numerical approximation of partial differential equations I Numerical integration of stochastic differential equations IB Numerical methods for conservation laws B Numerical methods for conservation laws B Numerical methods for electromagnetics C B Packing and covering B Parabolic and hyperbolic PDEs Probabilistic method Probabilistic method Probabilistic method B C S Set theory A Statistical theory B C S Statistical theory B C S Statisticy B C S Statisticy B C S Statistique multivariée B C S Théorie du calcul stochastique B C S S Théorie du calcul stochastique B C S S S S S S S S S S S S S S S S S S	Differential geometry of framed curves	Α	В		5
Gödel and recursivity Harmonic analysis Introduction à la géométrie riemannienne A Introduction to algebraic geometry A Lattice models A C S Martingales in financial mathematics Mathematical modelling of behavior Mathematical modelling of DNA Number theory in cryptography Numerical approximation of partial differential equations I Numerical approximation of partial differential equations II Numerical integration of stochastic differential equations Numerical methods for conservation laws Numerical methods for electromagnetics Packing and covering Parabolic and hyperbolic PDEs Probabilistic method Probabilistic method Probability theory Risk, rare events and extremes Robust and nonparametric statistics Set theory Statistical theory Statistical mellivariée Théorie du calcul stochastique S B C 5 Théorie du calcul stochastique S A B C 5 S S S S S Théorie du calcul stochastique S A B C S S S S S Introduction a B C S S S S A B C S S S S S S S S S S S S	Elliptic partial differential equations	Α	В		5
Harmonic analysis Introduction à la géométrie riemannienne Introduction to algebraic geometry A Introduction to algebraic geometry A Lattice models A C S Martingales in financial mathematics B C Mathematical modelling of behavior B Mathematical modelling of DNA B Number theory in cryptography A B Numerical approximation of partial differential equations I Numerical approximation of partial differential equations II B Numerical integration of stochastic differential equations Numerical methods for conservation laws B Numerical methods for electromagnetics C S Packing and covering B C Parabolic and hyperbolic PDEs Probabilistic method B C S Robust and nonparametric statistics B C S Set theory S Statistical theory Statistical multivariée B C S Théorie du calcul stochastique B C S S Théorie du calcul stochastique B C S S S S S S S S S S S S S S S S S	Géométrie hyperbolique et groupes discrets	Α			5
Introduction à la géométrie riemannienne Introduction to algebraic geometry A Lattice models A C S Martingales in financial mathematics B C Mathematical modelling of behavior B Mathematical modelling of DNA Number theory in cryptography A Number theory in cryptography A Numerical approximation of partial differential equations I Numerical approximation of partial differential equations II Numerical integration of stochastic differential equations Numerical methods for conservation laws Numerical methods for electromagnetics C S Packing and covering B C Probabilistic method B C Frobabilistic method B C S Robust and nonparametric statistics B C S Set theory Statistical theory Statistical multivariée B C S Théorie du calcul stochastique B C S S Théorie du calcul stochastique B C S S Théorie du calcul stochastique S C S S S S S S S S S S S S S S S S S	Gödel and recursivity	Α			5
Introduction to algebraic geometry Lattice models Martingales in financial mathematics Mathematical modelling of behavior Mathematical modelling of DNA Number theory in cryptography Numerical approximation of partial differential equations I Numerical approximation of partial differential equations II Numerical integration of stochastic differential equations IB Numerical methods for conservation laws Numerical methods for electromagnetics Packing and covering Parabolic and hyperbolic PDEs Probabilistic method Probability theory Risk, rare events and extremes Robust and nonparametric statistics Set theory Statistical theory Statistical multivariée Théorie du calcul stochastique A C 5 Mathematical mathematics B C 5 S 5 Statistique multivariée Théorie du calcul stochastique B C 5 S S Mathematical mathematics B C 5 S S S S S S S S S S S S	Harmonic analysis	Α	В		5
Lattice modelsAC5Martingales in financial mathematicsBC5Mathematical modelling of behaviorB5Mathematical modelling of DNAB5Number theory in cryptographyAB5Numerical approximation of partial differential equations IB5Numerical approximation of partial differential equations IIB5Numerical integration of stochastic differential equationsB5Numerical methods for conservation lawsB5Numerical methods for electromagneticsC5Packing and coveringBC5Parabolic and hyperbolic PDEsABCProbabilistic methodBC5Probability theoryBC5Risk, rare events and extremesBC5Robust and nonparametric statisticsBC5Set theoryA55Statistical theoryBC5Statisticy multivariéeBC5Théorie du calcul stochastiqueBC5	Introduction à la géométrie riemannienne	Α			5
Martingales in financial mathematics B C 5 Mathematical modelling of behavior B 5 Mathematical modelling of DNA B 5 Number theory in cryptography A B 5 Number theory in cryptography A B 5 Numerical approximation of partial differential equations II B 5 Numerical integration of stochastic differential equations B 5 Numerical methods for conservation laws B 5 Numerical methods for electromagnetics C 5 Packing and covering B C 5 Parabolic and hyperbolic PDEs A B C 5 Probabilistic method B C 5 Probability theory B C 5 Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statisticy or genomics B C 5 Statistique mul	Introduction to algebraic geometry	Α			5
Mathematical modelling of behaviorB5Mathematical modelling of DNAB5Number theory in cryptographyAB5Numerical approximation of partial differential equations IB5Numerical approximation of partial differential equations IIB5Numerical integration of stochastic differential equationsB5Numerical methods for conservation lawsB5Numerical methods for electromagneticsC5Packing and coveringBC5Parabolic and hyperbolic PDEsABC5Probabilistic methodBC5Probability theoryBC5Risk, rare events and extremesBC5Robust and nonparametric statisticsBC5Set theoryA5Statistical theoryBC5Statistics for genomicsBC5Statistique multivariéeBC5Théorie du calcul stochastiqueBC5	Lattice models	Α		С	5
Mathematical modelling of DNA B 5 Number theory in cryptography A B 5 Numerical approximation of partial differential equations I B 5 Numerical approximation of stochastic differential equations II B 5 Numerical integration of stochastic differential equations B 5 Numerical methods for conservation laws B C 5 Numerical methods for electromagnetics C 5 Packing and covering B C 5 Parabolic and hyperbolic PDEs A B C 5 Probabilistic method B C 5 Probability theory B C 5 Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Martingales in financial mathematics		В	С	5
Number theory in cryptography A B 5 Numerical approximation of partial differential equations II B 5 Numerical approximation of partial differential equations II B 5 Numerical integration of stochastic differential equations B 5 Numerical methods for conservation laws B C 5 Numerical methods for electromagnetics C 5 Packing and covering B C 5 Parabolic and hyperbolic PDEs A B C 5 Probabilistic method B C 5 Probability theory B C 5 Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Mathematical modelling of behavior		В		5
Numerical approximation of partial differential equations I B 5 Numerical approximation of partial differential equations II B 5 Numerical integration of stochastic differential equations B 5 Numerical methods for conservation laws B 5 Numerical methods for electromagnetics C 5 Packing and covering B C 5 Parabolic and hyperbolic PDEs A B C 5 Probabilistic method B C 5 Probability theory B C 5 Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Mathematical modelling of DNA		В		5
Numerical approximation of partial differential equations II B 5 Numerical integration of stochastic differential equations B 5 Numerical methods for conservation laws B 5 Numerical methods for electromagnetics C 5 Packing and covering B C 5 Parabolic and hyperbolic PDEs A B 5 Probabilistic method B C 5 Probability theory B C 5 Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Number theory in cryptography	Α	В		5
Numerical integration of stochastic differential equations B 5 Numerical methods for conservation laws C 5 Numerical methods for electromagnetics C 5 Packing and covering B C 5 Parabolic and hyperbolic PDEs A B 5 Probabilistic method B C 5 Probability theory B C 5 Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Numerical approximation of partial differential equations I		В		5
Numerical methods for conservation laws B 5 Numerical methods for electromagnetics C 5 Packing and covering B C 5 Parabolic and hyperbolic PDEs A B C 5 Probabilistic method B C 5 Probability theory B C 5 Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Numerical approximation of partial differential equations II		В		5
Numerical methods for electromagnetics C 5 Packing and covering B C 5 Parabolic and hyperbolic PDEs A B C 5 Probabilistic method B C 5 Probability theory B C 5 Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Numerical integration of stochastic differential equations		В		5
Packing and coveringBC5Parabolic and hyperbolic PDEsAB5Probabilistic methodBC5Probability theoryBC5Risk, rare events and extremesBC5Robust and nonparametric statisticsBC5Set theoryA5Statistical theoryBC5Statistics for genomicsBC5Statistique multivariéeBC5Théorie du calcul stochastiqueBC5	Numerical methods for conservation laws		В		5
Parabolic and hyperbolic PDEs Probabilistic method B C 5 Probability theory B C 5 Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Numerical methods for electromagnetics			С	5
Probabilistic method B C 5 Probability theory B C 5 Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Packing and covering		В	С	5
Probability theoryBC5Risk, rare events and extremesBC5Robust and nonparametric statisticsBC5Set theoryA5Statistical theoryBC5Statistics for genomicsBC5Statistique multivariéeBC5Théorie du calcul stochastiqueBC5	Parabolic and hyperbolic PDEs	Α	В		5
Risk, rare events and extremes B C 5 Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Probabilistic method		В	С	5
Robust and nonparametric statistics B C 5 Set theory A 5 Statistical theory B C 5 Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Probability theory		В	С	5
Set theoryA5Statistical theoryBC5Statistics for genomicsBC5Statistique multivariéeBC5Théorie du calcul stochastiqueBC5	Risk, rare events and extremes		В	С	5
Statistical theoryBC5Statistics for genomicsBC5Statistique multivariéeBC5Théorie du calcul stochastiqueBC5	Robust and nonparametric statistics		В	С	5
Statistics for genomics B C 5 Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Set theory	Α			5
Statistique multivariée B C 5 Théorie du calcul stochastique B C 5	Statistical theory		В	С	5
Théorie du calcul stochastique B C 5	Statistics for genomics		В	С	5
	Statistique multivariée		В	С	5
Topics in number theory A 5	Théorie du calcul stochastique		В	С	5
	Topics in number theory	Α			5

Projects		15
Project in Mathematics/ Data Analysis		9
Project in human and social science		6

Industrial Internship		30
Industrial Internship in Applied Mathematics		30