

Syllabus for AFS I,II,III.

November 8, 2016

References

- [Armstrong] M. A. Armstrong, *Basic Topology*, Springer International Edition.
- [Artin] Michael Artin, *Algebra*, Pearson, 1991, Prentice-Hall of India, New-Delhi 2003.
- [Greenberg and Harper] M. J. Greenberg and J. R. Harper, *Algebraic Topology: a first course*, Benjamin/Cummings Pub. Co. 1981.
- [Munkres] J. R. Munkres, *Topology*, II-ed. Prentice Hall.
- [Pressley] Andrew Pressley, *Elementary Differential Geometry* Springer, 2001.
- [Rudin] W. Rudin, *Real And Complex Analysis*, Mc-Graw-Hill 3rd ed.
- [Simmons] G. F. Simmons, *Introduction to Topology and Modern Analysis*, McGraw-Hill, 1983.
- [Spanier] E. H. Spanier, *Algebraic Topology*, Springer.
- [Stein and Shakarchi] Elias M. Stein and Rami Shakarchi *Complex Analysis*, Princeton Lectures in Analysis-II, 2003.

Please note that Chapters 6-11 and Chapters 13-14 in the I-edition of [Artin] correspond respectively to Chapters 7-12 and Chapters 15-16 of the II-edition of the book which is freely available on line.

AFS I

Algebra I Linear Algebra and Group Theory.

[Artin] Chapters 6,7,8,9.

Analysis I Complex Analysis.

[Stein and Shakarchi] Chapters 2,3,4.

Topology I Point Set Topology:[Simmons] Chapters 1-7. and Quotient spaces: [Armstrong] Chapter 4 'Identification Spaces'.

AFS II

Algebra II Rings and Modules. [Artin] Chapters 10,11,12.

Analysis II Measure and Integration:[Rudin] Chapters 1,2,3.

Topology II: Introduction to Curves and Surfaces, [Pressley] Chapters 1-11, (Chapter 9 on Minimal Surfaces may be left out).

AFS III

Algebra III Field Theory and Galois Theory.[Artin] Chapters 13, 14.

Analysis III Functional Analysis. [Simmons] Chapters 8,9,10,11.

Topology III

1. Fundamental Group and Covering Spaces [Munkres] Chapters 9 (Fundamental group) and 13 (Covering spaces). *-ed sections in Ch. 9 may be omitted.
2. Homology: [Spanier] Chapter 3, 4 / or [Greenberg and Harper] Part II.

Note: Notwithstanding what is listed above, the Faculty Members of any AFS program will have full latitude to pick and choose, or even introduce extra topics, so as to make the program more relevant to the students who have come to participate in that particular program.