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THE CHINESE UNIVERSITY OF HONG KONG
Department of Mathematics
MATH1010A (First term, 2017-18)
University Mathematics

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   The main focus of this course is on one-variable calculus. On top of the methods and techniques of computation and their applications, this section places a special emphasis on the theoretical foundations, for the benefit of those who want to acquire a deeper understanding of the subject.

Instructor

- Yung Po-Lam (Office: LSB 234. Email: `plyung@math.cuhk.edu.hk`)

Tutor

- TBA

Time and Venue

- Lectures: Mondays 3:30pm-4:15pm, Tuesdays 4:30pm-6:15pm, both at WMY 507.

- Tutorials (*from* Week 2): Mondays 2:30pm-3:15pm, WMY 507.

Assessment Scheme

- **Assignment**: 10%

- **Midterm Examination**: 40%

  The midterm will be held centrally on a date to be confirmed.

- **Final Examination**: 50 %

Course Material and Course Announcements

- Material (including tutorial sheets and assignments) common to all sections of MATH1010 in this semester will be uploaded to the common course homepage of MATH1010 at

  `http://www.math.cuhk.edu.hk/course/1718/math1010`

- Material specifically related to the lectures of MATH1010A will be uploaded to the course homepage of MATH1010A at

  `http://www.math.cuhk.edu.hk/course/1718/math1010a`

Assignments

Assignments count in the course assessment. They are uploaded to the common course homepage of MATH1010 (see above). An assignment that is submitted late (or is not submitted) will not be graded. You are reminded to adhere to the university policy on honesty in academic work. Please refer to

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`http://www.cuhk.edu.hk/policy/academichonesty/`

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- To submit your work, go to 2/F LSB. You will find the assignment boxes for all MATH courses in the corridor outside the general office of the Department of Mathematics. Slip your work into the assignment box for MATH1010A.

- Your marked work will be placed in the open area at the top of the assignment box for MATH1010A.

References

1. G. B. Thomas, *Thomas' Calculus* (any recent edition), Addison-Wesley *or* Pearson.

2. L. F. Cheung, C. H. Lau, *University Mathematics* (any edition), McGrawHill.

Here are some other references which also cover everything in the course but may give a more advanced or theoretical treatment of some (or all) of the topics in the calculus of one real variable. They are suitable for students who intend to acquire a broader and deeper understanding of mathematics beyond this course.

1. T. M. Apostol, *Calculus (Volume 1)* (Second Edition), Wiley.

2. R. Courant, *Differential and Integral Calculus (Volume I)*, Wiley-Interscience.

3. R. Courant, F. John, *Introduction to Calculus and Analysis (Volume I)*, Springer-Verlag.

4. M. Spivak, *Calculus* (any edition), W. A. Benjamin *or* Publish or Perish *or* Cambridge University Press.

Teaching Schedule

The following schedule is provisional, and for reference only; in particular, this is not an exhaustive list of all topics covered in this course. We will adapt the teaching schedule along the way.

- Weeks 1–5: sequences, functions, limits and continuity; differentiability, rules of differentiation, implicit differentiation, differentiation of inverse functions, higher order differentiation, curve sketching, applications of differentiation.

- Weeks 6–8: Mean-Value Theorem, Inequalities, L'Hopital's rules, Taylor's Theorem.

- Weeks 9–13: definite and indefinite integrals, Fundamental Theorem of the Calculus, techniques of integration, improper integrals, and further topics as time permits.