October 11, 2000

PROJECT INFORMATION
Math 421: Dynamical Systems & Chaos – Professor Haskins

AIMS OF THE PROJECT
One major goal of the project is to allow you to spend a sustained period concentrating on any aspect of dynamical systems which is particularly interesting to you. You are particularly encouraged to find a project which is relevant both to dynamical systems and to your major. It is your responsibility to decide on a project, although a number of projects will be suggested.

Other goals of the project are:
• to get you to write clear accurate descriptions of your scientific work, with appropriate credit to any sources you may have used.
• to give you practice at trying to present your ideas to your scientific peers – people who share a basic scientific background with you but who are not necessarily expert in the same area as you.
Both these skills will be useful for any career in science or engineering.

Some Important Dates
• Tues, 24 Oct – Hand in (during class) short description of proposed project.
• Tues, 21 Nov – Hand in (during class) a first draft of the project.
• Weds, 6 Dec – Show posters for project in class.
• Fri, 8 Dec – Hand in paper for project by 2pm.

Basic Requirements for the Project
• The finished project will consist of two pieces of work: a “poster” and a paper. The requirements for each of these is described below.
• Projects can be conducted individually or with one other person.
• For joint projects I will only require one paper and one poster per project, which should be jointly written up. Each of the authors will receive the same score for the project. Of course, I will expect joint projects to cover more material than a single person’s project. You must decide whether to write a joint project before handing in your project description on Oct 24. The project description should state who (if anyone) is your partner for the project.
THE PAPER

• The final paper should be TYPED and not just handwritten. Software possibilities for typesetting mathematical formulae, figures etc will be discussed later.
• As a very rough guide to length of the paper – an adequate project for a single person could probably be described in around 10 pages. A joint project should probably be somewhat longer. Do not include any figures you may have as part of your page count.

Your paper should include the following five parts in the order they appear below:

1. Title page including: names of authors, date, title of project, an “abstract” for the paper, i.e. a brief (one possibly two paragraph) description of what is contained in the paper.
2. An introductory section expanding on the abstract. This should tell the reader what the paper is about, why the subject of the paper is an interesting topic and outline what the rest of the paper will discuss in more detail.
3. The main body of the paper. Here you discuss the main details of the paper. You may want to break this part up into a number of subsections.
4. The conclusion - a summary of the most important things in the project, questions which arose from the paper but you were unable to answer during the project but which might warrant more investigation, etc.
5. A full list of references for your project (sources you have consulted for the project). You should cite the appropriate reference whenever material in your paper comes from some other source. Failure to give appropriate credit to your sources is sloppy scientific practice and will cause you to lose marks for the project.
6. (Optional) If you have many figures you may prefer to include them in a separate section at the end rather than in the body of the text.

THE POSTER

The aim of a “poster” is to summarize on one (possibly large) poster-sized sheet of cardboard/paper the main points of your project. You should make it intelligible to other people from the class. What this means is you can assume that your audience is familiar with the notions from dynamical systems that we have talked about together in the class. However, they may not be familiar with some of the ideas in your project so the poster should try to
explain in reasonably simple terms the main ideas, results etc. Illustrative pictures, figures or diagrams may help.

The project posters will be displayed in class on Dec 6 so that the class can try to get an idea what the other projects were about and learn something useful from them. After that I will collect the poster and grade it as part of the overall project. I will return posters and papers after grading them.

HOW TO CHOOSE A PROJECT & THE PROJECT DESCRIPTION

A separate sheet titled “Possible Projects” gives some of the thoughts I have had for projects for the class. Take a look through those. You are not limited to this list but you should come and talk to me about doing some other project not from the list to check that it is appropriate. Here is some general advice on choosing a topic:

• Pick something that sounds interesting to you.
• Consider picking some project that might be relevant to your future scientific career.
• Look up details on a few projects. See if the references are readable to you. Find other resources for the project.
• Consider talking to faculty from your major – they may have interesting ideas for a project that might be relevant to your major.

After you have chosen your project topic begin to do a little reading about it. Find some good references for it. Write up a one page description of the title of your project, your partner (if any), what you hope to cover in the project and the references you think will be useful. Hand this description in during class on Oct 24.

GENERAL SUGGESTIONS

• Start early – projects usually take longer than you think.
• Ask questions – if in doubt about anything (project topic, length of paper, how to type math, etc..) ask sooner rather than later.
• Choose your project partner (if any) wisely – you’ll both get the same score even if you end up doing all the work.
• Remember that the project is worth 20% of your final grade – devote time to it accordingly.
• Have some fun.