University of South Wales
Prifysgol De Cymru

Faculty of

Computing, Engineering and Science

HNC PROJECT

(Arborfield Top Up)

EE2D21

Student Handbook 2014/2015

October 2014

HNC (ArbTU)

HNC Individual Project

Operation and Quality Assurance

Contents

Section 2 describes how you will be assessed.
It is most important that you read this section in detail.

1 Introduction

Your project will contribute a great deal towards your qualification; typically the study allows you to put in to context all that you have learned over the past few years of study and to integrate your developed learning with a project or application from within your place of work. HNC Individual Projects are worth 40 Credits towards your final award.

Typically, you will already have been allocated two project supervisors to guide you through your project, but ultimately it is up to you to ensure that your project is carried out to the best of your ability, is completed in the allocated time period and your project report is submitted on time. One supervisor will be based in your regular place of work, the other will be your main point of contact for issues regarding your project work here within the university.

Your work place supervisor is your main contact. Make a point of seeing him/her on a regular weekly basis. Your university based supervisor is there to give additional support and to provide academic advice and guidance as well as to help with some technical aspects of your work. You will meet your academic supervisor through a timetabled weekly session.

It is usually the case that during the early weeks you will need to see your workplace supervisor more often in order to sort out any problems or uncertainties you may have. Thereafter, decide with him/her a time when it would be mutually convenient to meet, preferably in the same time slot each week. Ensure you are fully aware of what you are expected to do to achieve your goals. Don't be afraid to ask for clarification or to challenge any points with which you are unhappy. **Ask also for feedback from both of your supervisors on how they think you are doing.**

From the very start, get into the habit of recording **all** project information into **a project log book**. It is recommended that log books rather than loose leaf files are used. Both your supervisors and examiners (internal and external) will expect to see it. You must use it as a diary, recording all successes as well as failures.

The project should be the high point of the course, so give it your best shot!

Project identification

The project will normally be identified by the student. The project identification form should be completed by the student and signed off the field supervisor. He/She should confirm that resources are available to undertake the project in the field. The project identification form will be returned to the Faculty of Advanced Technology to be considered by the Projects Moderation Panel to confirm the appropriateness and level of the project. Project forms should be returned by Early-November.

Interim Report

The interim report should be completed within one month of the commencement of the project (typically mid December) and should include project planning basics such as the scope of the project, a work breakdown structure, planning methodologies used and the undertaking of a project risk analysis. Application of the work breakdown structure to develop project time plans and budgets should be considered. The use of project planning software is to be encouraged. The interim report will not be expected to exceed 2500 words.

Project Log Book

A project log book is to be maintained which will include details of the day to day operation of the project. It is envisaged that the log book will be signed by the field supervisor on a weekly basis. A copy of the log is to be sent to the University of Glamorgan academic supervisor on a bi-monthly basis.

A photocopy of the log book will be supplied to the academic supervisor on the following dates.

7th January
1st February
1st April

Project Report Submission (27th April 2015)

You must submit a project report. **Failure to submit a report may result in overall failure of the project.** Your report should be submitted to the Faculty Office by the Friday of the above week at the latest. The Faculty will require **one bound copy**.

The project report should be **typed** in accordance with the guidelines given in **section 8**.

Supervisors' Assessment of the Project

The final sections of your project will be marked in accordance with the assessment sheet, using the relevant descriptors included elsewhere in this handbook as a guide. A second academic supervisor appointed by the Faculty will mark your report independently. Both academic supervisors will meet to agree the mark for the report and to review the mark awarded by the first supervisor for the execution of the project.

2 Project Operation and Assessment

The following is a guide to the operation of the project and gives the important deadlines you have to meet and the way the marks are allocated.

Refer to the example mark sheet included elsewhere in this hand-book for a detailed breakdown of marking.

IT IS MOST IMPORTANT THAT YOU READ THIS SECTION VERY CAREFULLY, REFERRING WHERE NECESSARY TO THE RELEVANT MARKING SCHEME INCLUDED ELSEWHERE IN THIS HANDBOOK.

2.1 Project Planning and Management incorporating the interim report

It is important that you plan and schedule your work adequately to ensure that you meet the agreed aims of the project you are undertaking. This is a requirement to ensure that your project "fits in" around other work commitments that you may have as a part of your everyday job function within your organisation. Assessment of your planning and management capabilities will be assessed by your supervisors and through your written work and through your regular contact with them. It is a requirement that you compile and submit an interim report during the early stages of your study. A structured plan and a contingency plan is an essential part of this document. Your university based supervisor will be a useful point of contact and help to guide you through this process in the weekly timetabled slot.

2.2 Project Report Submission (First week of Summer Term)

You must submit a project report. **Failure to submit a report may result in overall failure of the project.** Your report should be submitted to the Faculty General Office by the stipulated deadline date. The Faculty will require **one bound copy**.

The project report should be **typed** in accordance with the guidelines given in **section 7**.

2.3 Supervisors' Assessment of the Project

The final sections of your project will be marked in accordance with the assessment sheet, using the relevant descriptors included elsewhere in this handbook as a guide. Your university based supervisor will mark your report.

2.4 Moderation

During your presentation, in addition to the panel judging the quality of your presentation, two senior members of staff will compare the achievement in your project against all other projects in your course. These moderators may, after discussion with your supervisors, modify your overall project mark. This moderation procedure ensures fair and consistent assessment..

2.5 External Examiner

In June external examiners will visit the university to interview a selection of students. We shall not know who will be selected until near the date **so assume you will be interviewed,** and prepare for it in conjunction with your supervisor. After the interviews, the external examiners will write a report on their findings which will be lodged in the examination board file for future reference.

2.6 Risk Assessment

Ask your supervisor to assist you in making a risk assessment. If you feel that there are hazards or potential dangers, bring these to his attention. As well as the more obvious dangers of working with electricity or chemicals, lifting heavy objects or working in cluttered surroundings would also come under this category.

3 Practical Work and Budgetary Control

Planning, costing and budgetary control are essential ingredients of any project. When planning your project you should take into account the cost and availability of any component parts you may need to build your system. Costing the project in advance will also ensure you do not run out of money before completion.

It is expected that every project student will be allocated a project budget by your company to cover component costs. The budget sum will depend upon the requirements of the project undertaken and the size of the budget that would be required to successfully complete the work should be costed and funds approved before agreement and commencement of the project.

If the project requires expensive components, your workplace supervisor should make arrangements for additional funding to purchase these items. Check with him/her if this is the case. Some projects will, of course, be mainly software based, and little or no components will be required.

Keep the project operation within your own control. Order components well in advance so that you are not wasting valuable time waiting for them to come in. Use wire-wrap or Vero-boards whenever possible. If, on the other hand, you opt for a PCB, (depending upon the nature of your organisation) you could be waiting many weeks for this to be made.

4 Workshop Requirements and Safety

The Faculty endeavours to ensure that projects reflect the current best practice in industry. To this end it is important that safety is an integral part of the project specification and delivery. **Risk assessment** must form part of the planning phase, and every precaution taken during the design and, in particular, the construction stages to ensure that safety is not compromised in any way. It is the responsibility of your workplace supervisor to ensure that the risk assessment has been undertaken for all work conducted within your place of work. You should also ensure that this has taken place before you commence work on the project. An example of this would be to ensure that no voltages above 50 volts are accessible, and that all power supplies are properly shielded and earthed.

The following should be considered at the planning stage of the project for any work conducted within the university environment:

4.1 If workshop facilities are required within the Faculty, i.e. cutting, drilling etc., this must be notified to the Safety Officer so that training can be organised. **Under no circumstances will you be allowed to use workshop equipment unless you have received training in the Faculty.**

4.2 You are not normally allowed to work unsupervised. If you wish to work unsupervised (or alone) in a laboratory, discuss this first with your supervisor, as certain procedures have to be followed.

4.3 Where you need to work on voltages which are outside the normal laboratory voltage limit (50 volts), it is necessary to complete a written procedure to deal with any potential hazards. **These procedures must be agreed in writing by you and your supervisor.**

4.4 Under no circumstances are you allowed to work 'live' on any equipment which use voltages in excess of 50 volts, or has high energy storage, e.g. large capacitors, accumulators etc.

Make sure you obtain a copy of the Safety Handbook which is available free from the Safety Officer. Ask your supervisor for details.

The risk assessment requirements for your work that is conducted outside of the university are the responsibility of your company. This should be conducted as stipulated by your employers risk assessment process, with the University of Glamorgan having no liability for the approval of these measures.

5. The Interim Report

You should submit a preliminary report to your first supervisor by the date given in the Schedule of Events. It should require typically not more than 2500 and must contain the following information:

(a) the title of the project.
(b) the names of both supervisors.
(c) the aims and objectives of the project
(d) summary of background work/research already carried out
(e) the specification for any hardware, software or other artifact you intend to produce.
(f) a detailed description of the way you intend to carry out the project.
(g) graphical plan showing a task/time breakdown (Gantt chart)
(h) contingency plans should things go very well, or more importantly, very wrong.
(j) the work carried out to date

Discuss the requirements of the report with your supervisor if you have any doubts as to what is needed.

6 Assessment Sheet and Descriptors

Individual HNC Projects

These descriptors will be used by your supervisors as a guide to the achievement you show in your project. Assessment of your work will be made on a continuous basis, week by week. Your supervisor will be able to provide feedback on how he thinks you are doing, if you ask him.

Supervisors' Report on Individual HNC Project

Candidate:_____ Scheme _____

Project Title: _____

1st Supervisor: _____

Refer to assessment guides and enter the marks awarded under each section to this record sheet.

INTERIM PRESENTAION/INSPECTION	Chair/Supervisor Signature	%	Weighting	Mark
			20/100	20
INTERIM REPORT		%	Weighting	Mark
				20

PROJECT EXECUTION	1st Super %				
Information Retrieval				15/100	15
Specification				30/100	30
Investigation of alternatives				15/100	15
Design				30/100	30
Analysis				20/100	20
Testing				20/100	20

Written Report (a) Structure-logical development-quality of technical statements-relevant theory					10/100	15

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Written Report (b) Readability-completeness-quality of summary and conclusions-references and appendices-English-punctuation					10/100	15
Final % and mark total	**Remarks**				**%**	200
Totals after moderation					**%**	200

Signature of 1st Supervisor_____Date_____

Signature of Moderator, if applicable_____Date_____

Signature of Project Coordinator_____Date_____

EXECUTION

INFORMATION RETRIEVAL

Attainment Description	
Project Attainment P1 The work is being supported by a well-organised self-directed learning effort in which text-books, manuals and papers are being studied, an excellent grasp of the applicable theory and practice obtained, resulting in a pronounced beneficial effort on the validity of the project.	**75-100**
Project Attainment P2 A diligent self-directed effort is being made to obtain relevant information from many sources, resulting in a sound grasp of the applicable theory and practice, with a significant beneficial effect on the validity of the project.	**65-74**
Project Attainment P3 Self-directed study is part of the planned effort and good progress has been made in learning about applicable theory and practice. Some additional guidance is required on how to interpret and apply what has been learned.	**55-64**
Project Attainment P4 Fruitful self-directed learning requires significant encouragement and guidance. Some influence of the learning is apparent in the validity of the project.	**44-54**
Project Attainment P5 There is not much of a self-directed learning effort apparent so far, although its need is acknowledged in some minor aspects.	**35-43**
Project Attainment P6 There is little evidence of a self-directed learning effort.	**0-34**

EXECUTION

PROBLEM SPECIFICATION

Attainment Description	
Project Attainment P1 Demonstrating an excellent grasp of the requirements of the product and able to turn these into a sufficiently effective specification .	**75-100**
Project Attainment P2 Showing a very good understanding of the requirements of the product and has shown an ability to develop the essentials of the specification.	**65-74**
Project Attainment P3 Has been able to create a specification that covers most of the essentials, with some guidance	**55-64**
Project Attainment P4 The specification was deficient in some of its essentials but has been improved with significant prompting.	**44-54**
Project Attainment P5 Has not able to sufficiently identify the essentials of the specification and requires close and continuing supervision in order to make progress.	**35-43**
Project Attainment P6 The specification was deficient in most respects and close supervision and repeated prompting is needed to make progress.	**0-34**

EXECUTION

INVESTIGATION OF ALTERNATIVES

Attainment Description	
Project Attainment P1 Using own initiative, a complete range of alternative methods of design and construction of the specified system are being investigated.	**75-100**
Project Attainment P2 Investigating, using own initiative, a wide range of alternative methods of meeting the specification.	**65-74**
Project Attainment P3 Investigating, using own initiative, the more obvious alternative methods of design and construction to meet the specification.	**55-64**
Project Attainment P4 Requires encouragement and guidance to seek out alternative design and construction methods.	**44-54**
Project Attainment P5 The investigation of alternatives is not being undertaken without considerable intervention by the supervisor.	**35-43**
Project Attainment P6 There is little evidence that, even with encouragement and guidance, alternatives are being sought.	**0-34**

EXECUTION

DESIGN

Attainment Description	
Project Attainment P1 Appropriate design and construction techniques are being very successfully applied to a high standard.	**75-100**
Project Attainment P2 Demonstrating a good working knowledge of available design and construction techniques that are being applied with considerable success.	**65-74**
Project Attainment P3 A competent demonstration of fundamental design skills and knowledge	**55-64**
Project Attainment P4 Design skills are evident but repeated guidance on their exploitation is sometimes necessary.	**45-54**
Project Attainment P5 Some limited success with circuit/software so far developed. Unlikely to obtain a pass grade at this level of effort, skills and knowledge of design.	**35-44**
Project Attainment P6 Construction/structure is unconvincing. The circuit/software shows little sign of producing a useful output. Little evidence of design ability at this level.	**0-34**

EXECUTION

ANALYSIS

Attainment Description	
Project Attainment P1 Progress is guided by a critical understanding of the basic principles that is leading to highly effective solutions of problems encountered.	**75-100**
Project Attainment P2 Demonstrating a sound knowledge of the basic principles that is contributing significantly to finding solutions to problems encountered.	**65-74**
Project Attainment P3 The application of basic principles is, with some guidance, leading to solutions of problems encountered.	**55-64**
Project Attainment P4 Continued guidance is necessary so that the basic principles are understood and applied with success.	**45-54**
Project Attainment P5 Close and continued guidance is necessary on the applicability and employment of basic principles.	**35-44**
Project Attainment P6 There is little evidence of understanding of basic principles.	**0-34**

EXECUTION

TESTING

Attainment Description	BSc
Project Attainment P1 Thorough testing is carried out as a matter of routine at each major stage and at other times when clarification of performance is found to be necessary, with well-chosen results compared with predicated behaviour and effective modifications put in place.	**75-100**
Project Attainment P2 Testing is carried out at major stages and any other time when clarification of performance is thought to be necessary, comparison of results with predicted behaviour made and modifications put in place.	**65-74**
Project Attainment P3 Testing is carried out as a routine at major stages, comparison with predicated behaviour made, and modifications put in place.	**55-64**
Project Attainment P4 Testing is carried out at a few stages and at the remaining when prompted. Comparison with theoretical expectations is often made but not always. Some essential modifications are not always realised to be necessary.	**45-54**
Project Attainment P5 Testing is carried out in a disorganised manner with the results not fully understood or acted upon	
Project Attainment P6 Testing is superficial and results do not contribute to progress or improvement in the work.	

Written Report Mark Sheet

Student Name:.....Scheme.....

Project Title: .....

Written Report (a)- *Structure; logical development; quality of technical statements; development of relevant theory.*

	MEng	Other courses
Both theory and practical work were combined in a highly structured and logically presented report that gave an in-depth evaluation of the work carried out. Technical, entrepreneurial, business and management elements were skilfully integrated. There was extensive analysis, self-criticism and evidence of logical thought. It was highly evident that the technical input had been influenced by leading edge research or new product development.	**75 - 100**	
Both theory and practical work were combined in a well structured and logically presented report incorporating technical, entrepreneurial, business and management elements. There was in-depth evaluation and self-criticism and evidence that the technical input had been influenced by leading edge research or new product development.	**65- 74**	
A well structured, highly readable report containing full technical information. There was considerable evidence of detailed evaluation and self-criticism. The technical input had been influenced by leading edge research or new product development.	**55 - 64**	**75 - 100**
The report was well structured and contained full technical information. There was considerable evidence of evaluation, self-criticism, and that the technical input had been influenced by research or product development.	**45 -54**	**65- 74**
The report had a reasonable structure and was logically presented. It contained detailed sections on both practical work and the pertinent theory. There was some evaluation and self-criticism.	**35 - 44**	**55 - 64**
A basic report which contained all the facts, albeit somewhat haphazardly presented. It was not well structured but did contained some evaluation of the work done.	**20 - 34**	**45 -54**
The report lacked structure and was incomplete, sections on practical work or relevant theory being missing. It contained a self-congratulatory or shallow evaluation of the work completed.	**0 - 19**	**35 - 44**
The report was incomplete with large sections of practical work or relevant theory missing. There was little evidence of any evaluation or self-criticism.		**20 - 34**
There were glaring omissions in the totally unstructured report, which was generally poorly presented. No evaluation or self-criticism of any form was evident.		**0 - 19**

Written Report (b) *- readability; completeness; quality of summary and conclusions; use of references and appendices; use of English; freedom from spelling, grammatical and typographical errors.*

	MEng	Other courses
The report was fluently written and a joy to read. It showed an excellent command of English and was expertly presented with clear print and high quality diagrams. It represented an excellent account of the work undertaken. All the required sections, synopsis, introduction, conclusion, references, acknowledgements etc. were present and fully represented. It was free from spelling, grammatical and typographical errors. All references were fully acknowledged.	**75 - 100**	
The report was well written and easy to read. It showed a good command of English and was well presented with clear print and high quality diagrams with only a few spelling, grammatical and typographical errors. It represented an excellent account of the work undertaken. All the required sections of the report were present and adequately represented. All references were fully acknowledged.	**65 - 74**	
The report was complete and gave a complete and accurate account of the work undertaken. It showed a good command of English and was well presented. It contained a minimum of spelling, grammatical and typographical errors. All of the required sections were present. The text was supported throughout by very good circuit and line diagrams and all references were acknowledged. *The mark awarded should be determined by the degree of 'readability'.*	**55 - 64**	**75- 100**
The report was complete and gave a reasonable account of the work undertaken. Although generally well written, it sometimes lacked clarity and concision. Bottom end of the scale - it contained some spelling, grammatical and typographical errors. Diagrams were OK. All references and sources of assistance were acknowledged.	**45 - 54**	**66 - 74**
The report was somewhat disjointed and did not flow as well as it should. Some of the required sections were not present. Diagrams were generally OK, but not always used to elucidate the text. Most, but not all of the references and sources of assistance were acknowledged. It contained some spelling and grammatical errors.	**35 - 44**	**55 - 64**
The report was very disjointed and did not read well. Better use could have been made of diagrams and graphs. Some sources of assistance, including references were acknowledged. More care should have been taken over spelling, grammatical and typographical errors.	**20 - 34**	**45 - 54**
The report was incomplete and barely adequate. Better use could have been made of diagrams and graphs. Some sections of the report were missing and sources of help were not acknowledged.	**0 - 19**	**35 - 44**
The report was incomplete, and large sections of the report were missing. Sources of help were not acknowledged. There had been little or no attempt to correct obvious spelling, grammatical and typographical errors.		**20 -34**
The report was extremely poorly written and was an inadequate reflection of the work undertaken. It contained few original contributions from the author and major sections were missing, mainly consisting of chunks of irrelevant text copied from unacknowledged sources. It was riddled with spelling, grammatical and typographical errors.		**0 - 19**

Enter each of the % marks in the appropriate cell of the Supervisors' Report	**Initials of Supervisor**

7 Project Report Format and Typing Instructions

On completion of your project you **must** submit a report.

7.1 Presentation

The report should be typed on white A4 paper at 1.5 line spacing leaving a 37 mm left hand margin and a 25 mm right hand margin. The top and bottom margins should also be 25 mm. Text pages should be numbered at the bottom. Diagrams and tables should normally be presented on separate pages adjacent or close to the relevant text.

7.2 Typing

Typing may be arranged via friends, a typing bureau or a word processing bureau. The latter is clearly the best, but is obviously the most expensive. Always allow plenty of time both for typing and for the corrections. This is especially true if the work is being done by friends or by a sponsoring firm 'as a favour' since under these circumstances it is not possible to exert any pressure. Some students do their own typing, but this can divert your attention at a time when your finals are approaching and is **not recommended** unless you are a competent touch typist and have immediate access to your own facilities.

7.3 Layout

The first page of your report should be a title page laid out as shown on the final sheet of these notes, and indicating the title, the author, scheme and the date.

This should be followed by an abstract, or summary, of about 150 - 250 words.

Any acknowledgements should come next, followed by the 'contents' page, listing the chapter headings and relevant page numbers.

The main body of the report, including the introduction, the main body of the report and the conclusions then follow. The whole is rounded off by a references section and appendices if appropriate.

All text pages except the title page, abstract, acknowledgements and contents, should be numbered.

7.4 Report Content

The purpose of the abstract is to define the area covered by the project. It should contain sufficient information to enable any electrical engineer to determine whether the content will be of interest to him/her. (For example: look at any paper in the IEE or IEEE Proceedings/ Transactions)

All reports should contain an introduction and conclusion. The introduction sets out the background to the project and the overall intention while the conclusions give the

achievements of the project. It should be possible by reading them to determine exactly what was done without having to read any of the other sections of the report.

The remainder of the report sets out the theoretical, design and implementation details of the project.

There are no hard and fast rules about the length of your project report as projects vary widely. As a guide, about 10,000 - 12,000 words is usually more than enough. Avoid including masses of bookwork, stating only enough theory to put the work you have done into context.

7.5 Style

Chapters should be numbered in order and sections within chapters should be numbered as follows:

1.0
1.1
    1.1.1
    1.1.2
1.2
2.0
    etc., etc.

Where references are given they ought to be keyed to the appropriate section of the text.

The normal form used in a reference section is:

1. Bywarer, R E H and Mansi, L S A “Low cost reciprocals generator”. Digital Processes, No 6, 1980 pp 97-104.

Appendices should be used for large volumes of tabulated data, program listings etc. which would otherwise disturb the flow of the main text.

7.6 Submission of Report

One bound copy of the report is required by the Faculty (this is not returned) and all of the costs of typing and copying must be met by the student.

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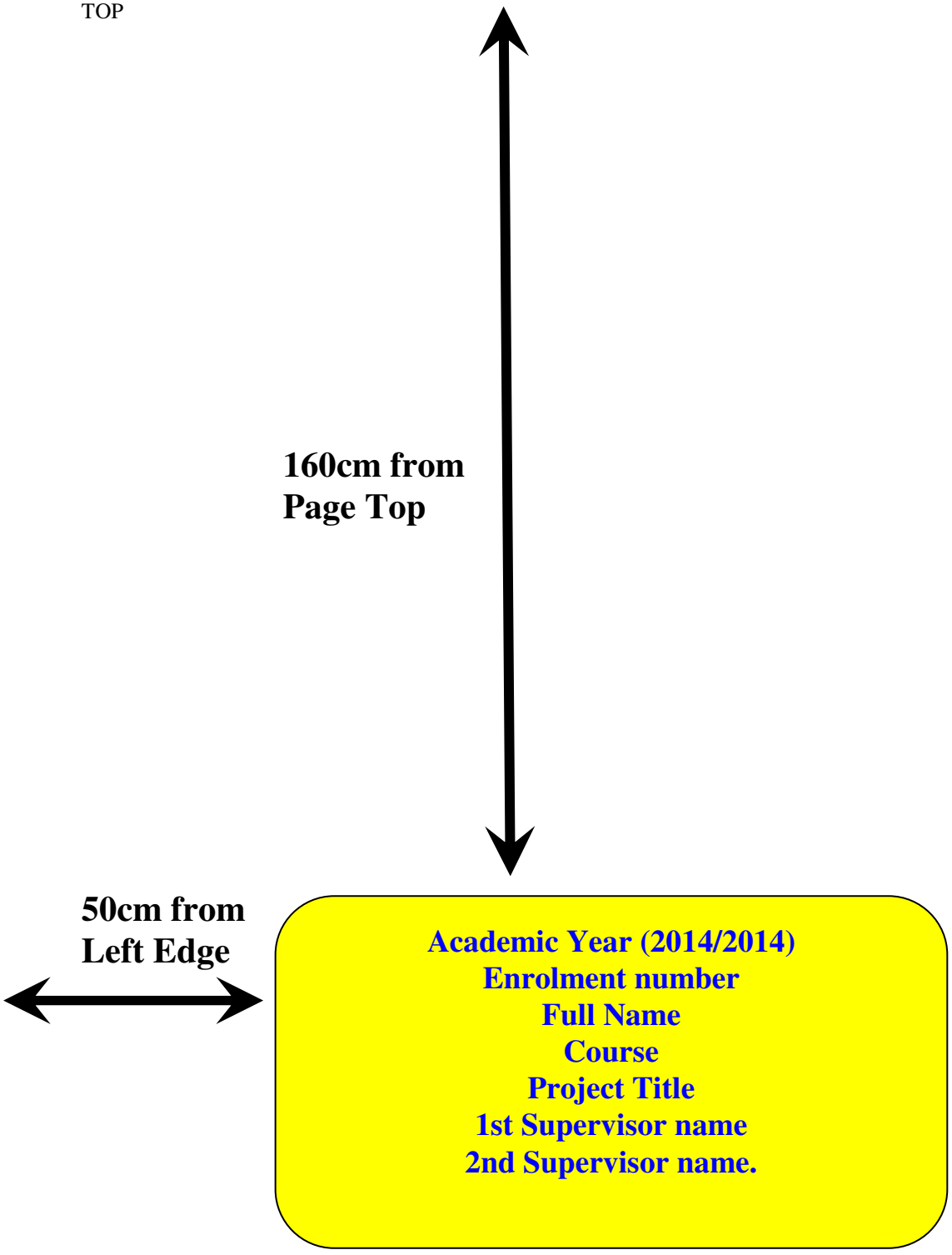
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Project Title
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